olivetti

Technical Service Dept.

LETTERA 22

INTERNAL PUBLICATION CONFIDENTIAL

Mod. T. 5-146 In.

Use and Features

LINE SPACING				
Name	Line space in mm.			Number of teeth on wheel
STANDARD	5	7,5	10	40
ZURICH 1	4,53	6,8	9,07	44
RUYS'	4,25	6,37	8,5	47

There are two models of this portable machine, which are as follows:

L 22 (without tabulator)
LL 22 (with tabulator).

All the other uses and features wich will be mentioned in the booklet are common to both models.

Line spacing.

The line space lever 6 may be turned back so that the machine fits correctly in its carrying case.

The distance between the typed lines (line spacing) is determined by the position of the line space selector 9. There are three positions in addition to the zero 0; the function of wich is, to free the platen from the line spacing mechanism, so enabling the operator to type between the lines and then return to the original line of typing and line spacing.

Clutch.

This enables the typing to be started at any desired position on the paper and also to make corrections between the lines when the paper has been removed from the machine.

When the paper is still in the machine, it is advisable to use the zero position for making corrections and then return automatically to the previous line of typing.

Paper supports.

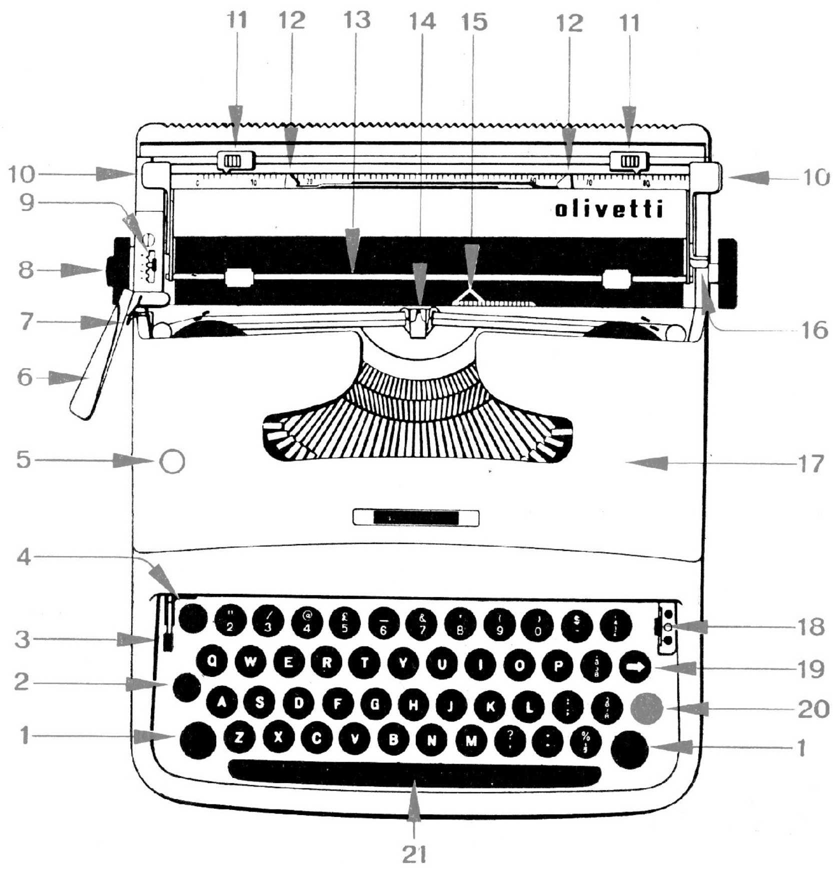
The paper supports 12 are raised and then used to hold up the paper whilst typing.

Margin stops and margin Release key.

The margin stops 11 may be moved along the length of the margin bar by a small pressure of the finger, and when set, limit the length of the typed line.

The margin release key 4 gives the following facilities:
— to continue typing beyond the R.H. margin stop
— to go beyond the L.H. margin stop when returning to the beginning of the line.
— to obtain automatic paragraph indentation — i.e. by depressing the key whilst operating the carriage return lever, the carriage will stop five spaces before the L.H. margin line.

1 — Shift Keys
2 — Shift Lock Key
3 — Tabulator Setting and Clearing Lever
4 — Margin Release Key
5 — Touch Tuning Control Lever
6 — Line Space Lever
7 — Carriage Lock Lever
8 — Clutch Button
9 — Line Space Selector
10 — Carriage Release Levers
11 — Margin Stops
12 — Paper Supports
13 — Bail Rod
14 — Type Guide
15 — Line Finder
16 — Paper Release Lever
17 — Removeable Front Cover
18 — Ribbon Colour Change Lever
19 — Back Space Key
20 — Tabulator Key
21 — Space Bar.



Ribbon reverse and colour change.

The ribbon reverse is automatic. To carry it out by hand, move the reverse arm which is near a spool (i.e. the spool from which the ribbon is unwinding at that instant) towards the centre of the machine. The ribbon drive will have now reversed.

The ribbon colour change lever 18 enables a red or black copy to be obtained. The intermediate position (white dot) called the « neutral » or « stencil » prevents the ribbon from rising when cutting stencils for duplicating work. Precautions should be taken to avoid the chemicals with which some stencils are impregnated from damaging the rubber platen.

Touch tuning control.

The keyboard touch may be adjusted by moving the control lever 5 on the L.H. side under the removeable front cover. Position 1 is the lightest touch and position 4 the heaviest.

Tabulator.

This enables words or figures to be typed in columns, always maintaining the L.H. side of the columns in the same position.

To clear the machine of any tabulator stops previously set, push the lever 3 towards the rear of the machine and move the carriage a complete movement from left to right.

To set a stop, bring the carriage to the point desired and push the lever 3 towards the front of the machine. Depress the tabulator key 20 and the carriage will move and come to rest at the first stop set; typing may then proceed for this column; then depress key 20 again and the same procedure may be carried out for the second stop or third as desired.

To cancel a single stop, depress key 20 so that the carriage moves to the stop; then push lever 3 towards the rear.

Bail rod.

The bail rod 13 has two positions, on the platen and to the rear. It carries on it two rollers for holding the paper to the curve of the platen.

Line finder.

The line finder 15 is graduated to the pitch of the machine; the small triangular cut-out is used for drawing horizontal or vertical lines when the paper is in the machine.

Paper release lever.

When the release lever 16 is operated, the feed rollers are moved away from the platen. This allows the insertion of several sheets of paper with carbons in between.

Carriage lock lever.

This lever 7 is for use during transit of the machine; it completely locks the carriage so taking the strain off the loose dog on the escapement.

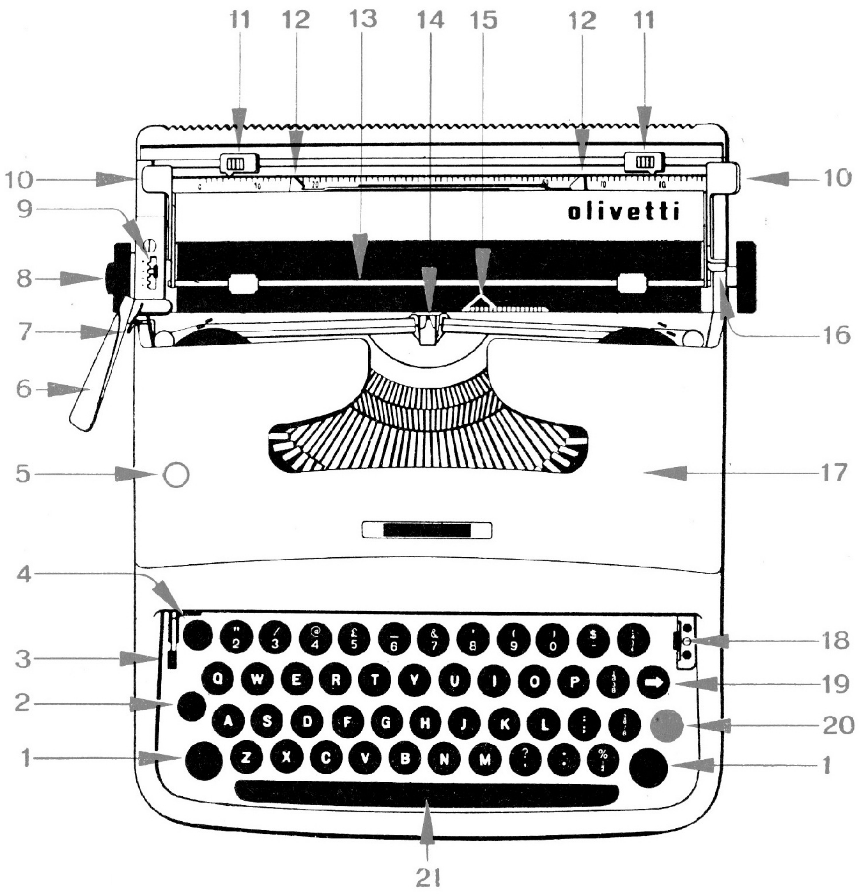
Shift Mechanism.

This has embodied an anti-rebound mechanism which locks it in the small-letters position.

Technical data.

Weight of the machine . .	8 lbs. 2 ½ ozs.	(3,700 Kg).
Height	3 ½"	(85 mm.)
Overall width	12"	(302 mm.)
Overall depth	12 ½"	(324 mm.)
Platen diameter	1 ¼"	(32 mm.)
Maximum width of paper accomodated	9 ½"	(243 mm.)
Maximum typing line . . .	9"	(229 mm.)
Number of spaces for:		
PICA 2.6 mm. pitch . . .		(87)
ELITE 2.23 mm. pitch . .		(101)

Line spacing: Standard - Ruys - Zurich 1.



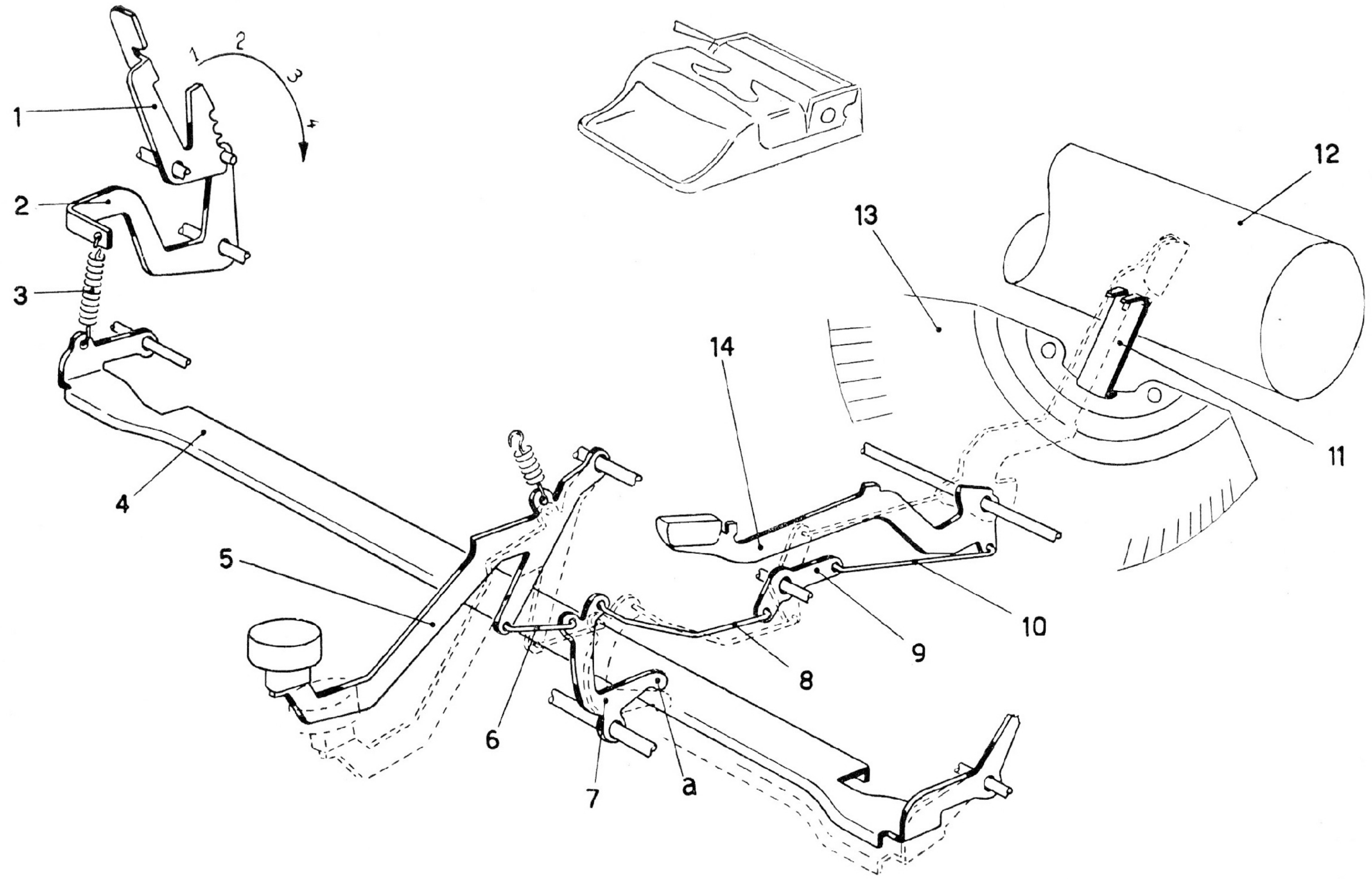
1. Typebar Action and Touch Tuning

I. Typebar action and touch tuning.

When a key is depressed the corresponding key lever 5 starts the type bar action in motion; this movement comprises link 6, the sub lever 7, the link 8, the typebar lever 9, the link 10 and the typebar 14. The typebar comes to the position shown by the dotted line, bringing the corresponding type face into contact with the platen 12. During the latter part of its path the typebar is guided by type guide 11 on the typebar segment 13.

In its rotation the sub lever 7 makes the ribbon drive plate 4 rotate by means of its tongue **a**. The drive plate determines the advance and lift of the ribbon (chapters III and IV).

A certain force is necessary to make plate 4 rotate and this is provided by spring 3. By changing the position of the small lever 1 the crank 2 takes up a different position, causing spring 3 to attain four different tension values. The pressure necessary to lower the keys is changed by this procedure, so that it is possible to adjust the touch according to the individual preference of the operator.



2. Shift and Shift Lock

II. Shift.

The frame of the shift mechanism, which is pivoted on the rod 26, is composed of two levers, 24 and 27, coupled by shaft 25.

Two cranks 18 and 28 are fixed on the shaft 15 of the shift; at the left extremity of the same shaft is the flexible coupling crank 19 the shank **n** of which enters the slot **m** of crank 18.

The typebar segment 13 is secured to two supports 16 and 16′; the pins of cranks 18 and 28 of the shift shaft 15 are inserted into the lower holes of these supports. The two supports 16 and 16′ can be lowered and their path is guided by the balls **c**.

a) Small letters position.

This is indicated by the full line. The segment is held in this position by the fixed pin **d** under the action of springs 17 which having different tension values, pick up the play of the segment always in the same direction. The segment is locked in the small letters position as tongue **f** of the support 16 is in contact with the bent arm **e** of lever 24.

b) Capitals position.

This is indicated by the dotted line.

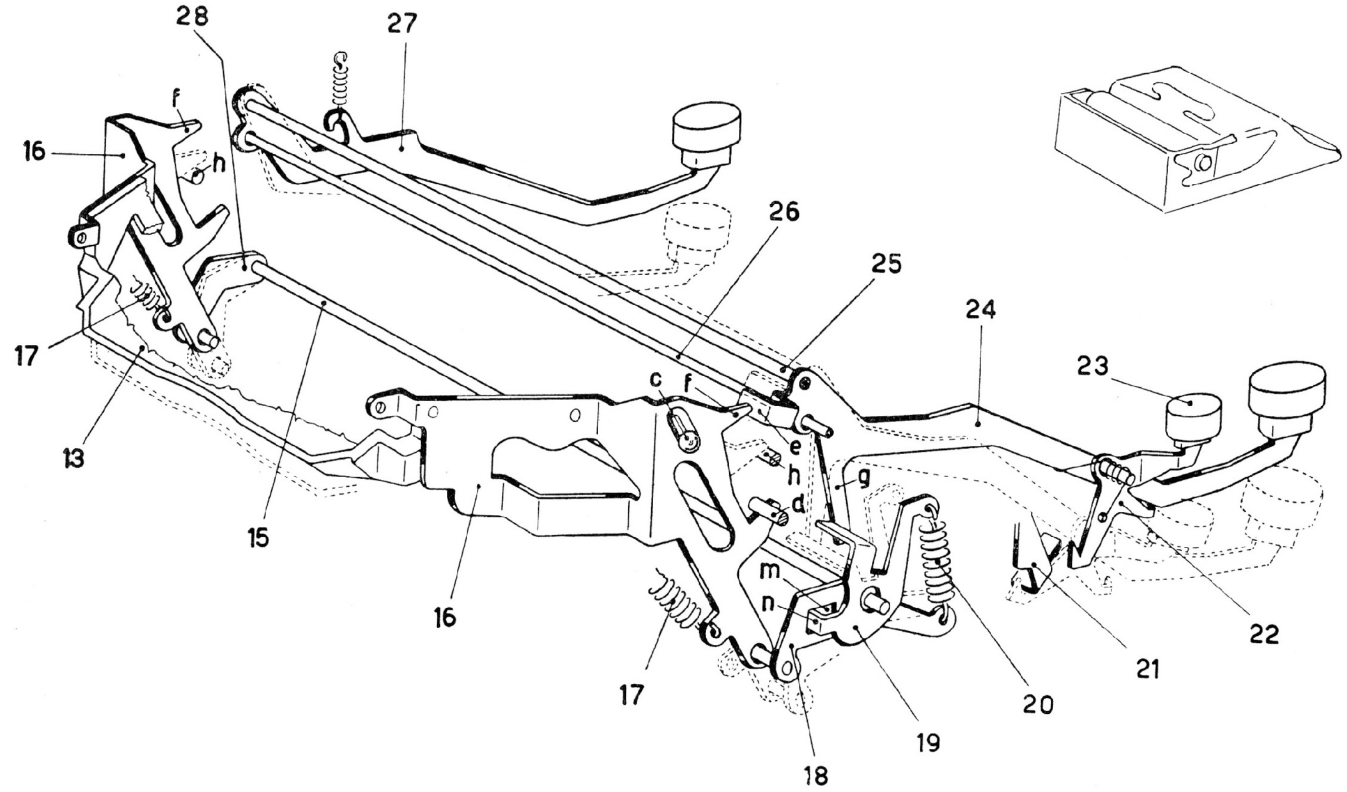
When one of the two shift keys is lowered, the shank **g** of lever 24 makes the crank 19 turn; the latter, through spring 20 moves the two cranks 18 and 28 and they lower the segment. Tongues **f** of the supports 16 and 16′ stop against the eccentric pins **h** which determine the capitals position.

c) Shift lock.

When the shift lock key 23 is depressed, lever 24 of the shift frame follows its movement.

When the segment has reached the capitals position, which is determined, as we described above, by the eccentric pins **h**, the shift lock lever 22 will not hook to the corresponding stop 21 until the spring 20 is stressed.

While the shift lock key is held depressed the segment plate remains in the position reached and then flexible coupling of the shift goes into action. Shank **g** of lever 24 makes crank 19 rotate further and this, held by spring 20, continues through a small additional path limited by the movement that tongue **n** can make in slot **m** of lever 18. The shift lock lever will then hook to stop 21. The flexible coupling of the shift goes through the same operations when it is desired to unlock the shift.



NOTES

3. Color Change and Ribbon Vibrator

III. Colour change and ribbon vibrator.

a) *Typing in black.*

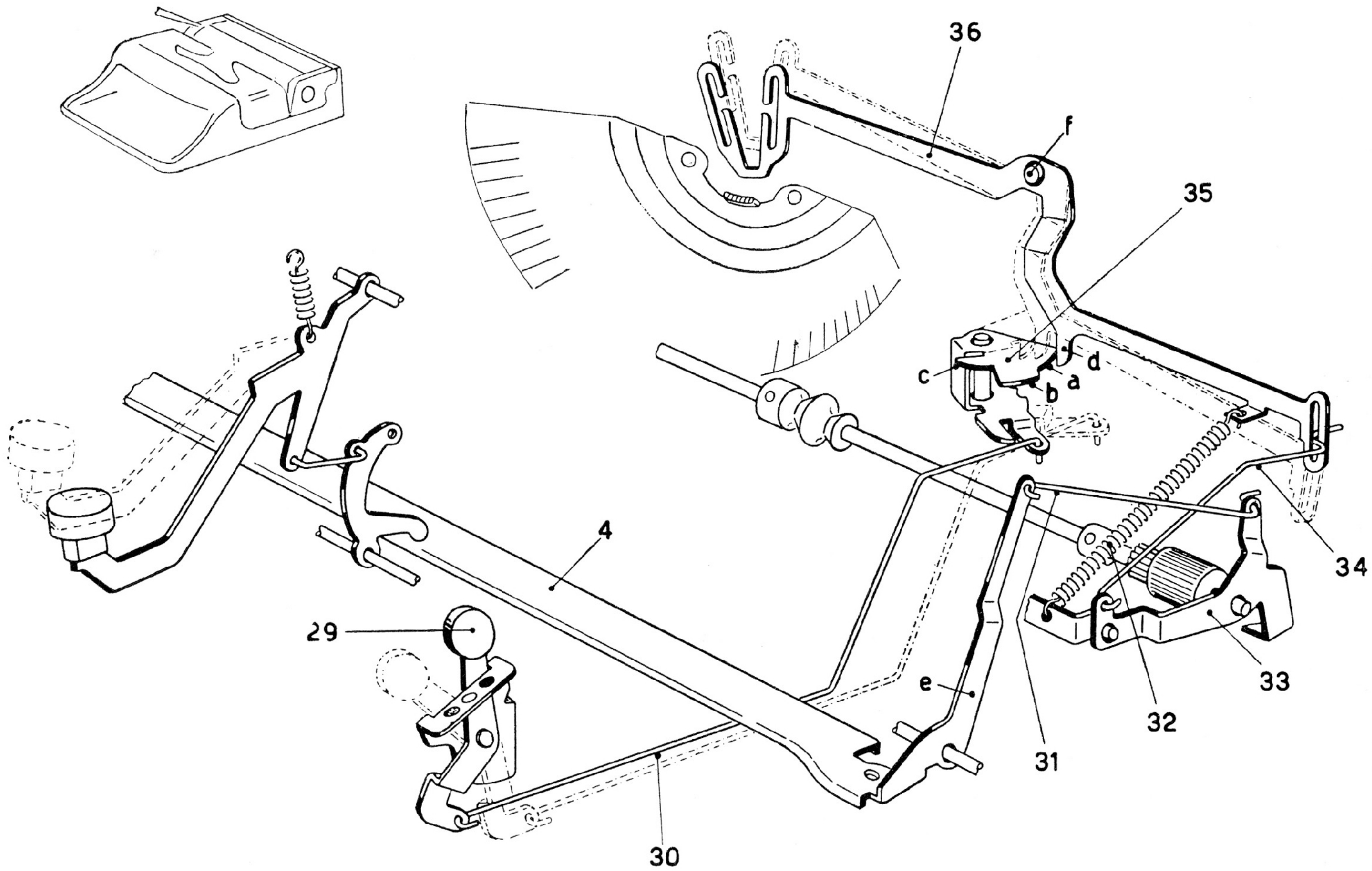
The colour change lever 29 can be placed into three positions, those of « black », « stencil » and « red ». When the lever 29 is moved, the position of the cam 35 is changed through the link 30. So that when a typing key is depressed one of the three stops **a**, **b** or **c** will limit the movement of the ribbon vibrator tongue **d**.

In the illustration, the two colour device is shown with the full lines indicating the « black » position; in this case the stop **a** of the cam 35 will make contact with tongue **d** of the ribbon vibrator 36. When a typing key is lowered, the plate controlling the ribbon drive 4 (chapter I) is made to turn by the sublever of the typing key depressed. The arm **e** of the ribbon drive plate, pulls crank 33 in the keyboard direction through the link 31; the crank in turn moves the ribbon vibrator connecting link 34. Impelled by spring 32, the ribbon vibrator 36 rotates on the pin **f** until the tongue **d** comes in contact with stop **a** of cam 35. This determines the « black » position. When the typing key is released, drive plate 4, link 31, crank 33 and link 34 return to their normal positions, the link 34 returning the ribbon vibrator 36 to its normal position.

b) *Typing in red.*

When the colour change lever 29 is brought to the position of « red » (shown in the figure with a dot-and-dash line), the link 30 makes the cam 35 rotate so that the latter brings its stop **c** in coincidence with tongue **d** of the ribbon vibrator 36 when a typing key is depressed.

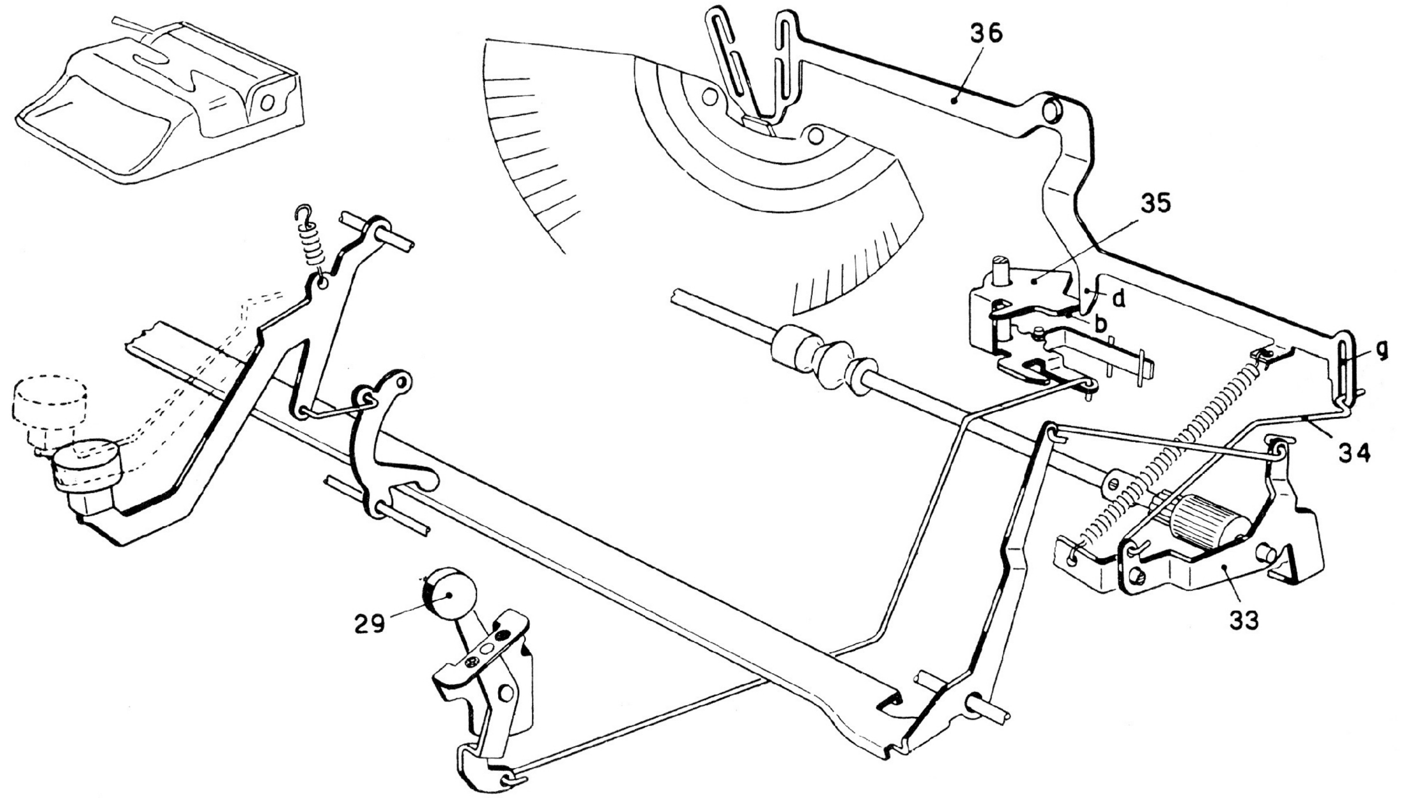
The actual operation is now as detailed for the « black » position except that in this instance the ribbon vibrator attains a higher position which is shown by dot-dash line on the illustration.



c) Stencil position.

When the colour change lever 29 is brought to the « stencil » position, stop **b** of the cam 35 is in contact with tongue **d** of the ribbon vibrator 36.

When a typing key is lowered, the movements previously described are repeated but the ribbon vibrator 36 will not move because of tongue **d** being against the stop **b**. The type face therefore strikes directly against the platen.



4. Ribbon Feed

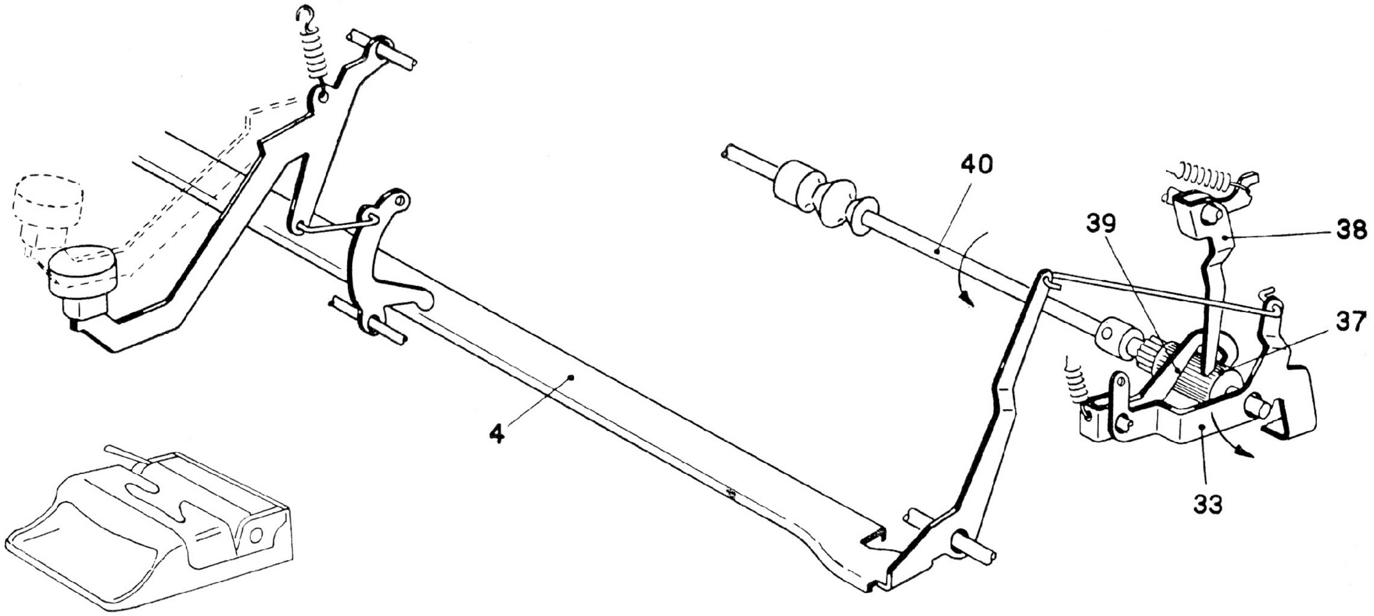
IV. Ribbon feed.

a) Advance.

It has already been explained that when a typing key is depressed the ribbon drive plate 4 makes crank 33 turn in the direction shown by the arrow. The loose pawl 39 pivoted on this, follows the movement and its serrated end engages with the ribbon drive pinion 37, turning it in the same direction. The pinion transmits the movement to shaft 40, which via the vertical shaft rotates one of the ribbon spools (see following page); this makes the ribbon advance in one direction or the other.

During the rotation of the drive pinion 37, the fixed pawl 38 rides over the teeth of the pinion.

When the typing key is released, the crank 33 returns to its normal position. The fixed pawl 38 then engages and holds the gear 37 in the position previously reached while the loose pawl 39 rides over the teeth of the pinion 37 until it also returns to its normal position.



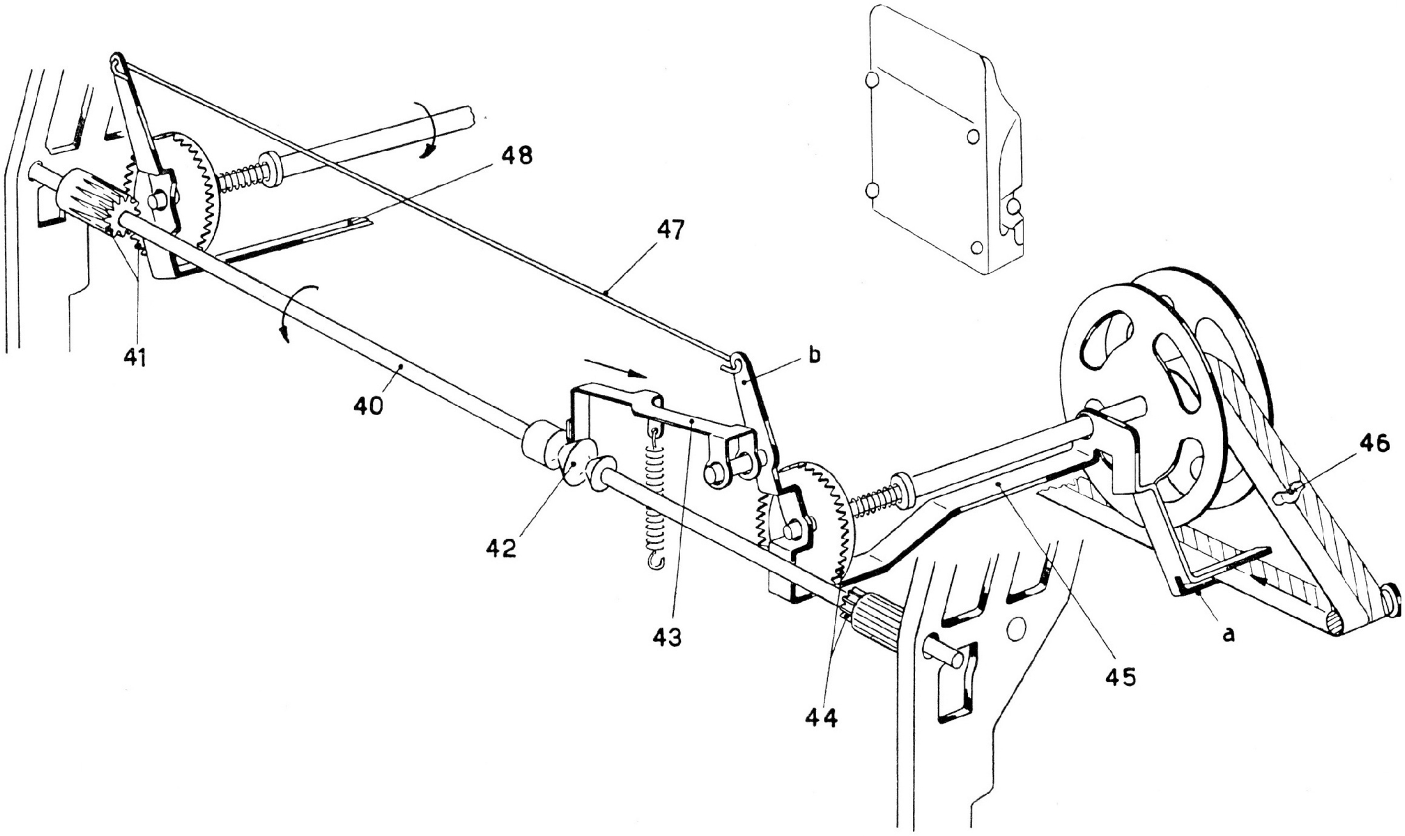
b) Reverse.

In the position shown in the figure, the ribbon drive gear and pinion 41 are in mesh; therefore shaft 40 makes the L.H. ribbon spool shaft rotate in the direction shown by the arrow.

When the ribbon on the right spool is almost completely unwound, eyelet 46 on the extremity of the ribbon itself makes contact with fork **a** of the reverse arm 45, turning the arm about its axis. Arm **b** pulls the pawl 43 and this is forced to rise along the conical surface of the circular cam 42. When the pawl reaches the peak of the cam it begins to drop into the other side of the cam so moving shaft 40 to the left. Gear and pinion 41 are disingaged and gear and pinion 44 engage; this causes the direction of the ribbon movement to be reversed, for the ribbon will now wind on the R.H. spool.

Reverse arm 48 is connected, through connecting link 47 to reverse arm 45 so that they move together and bring the ribbon mechanism into a position ready for the next reversal.

Pawl 43 entering into either of the grooves of the cam 42 also determines the lateral position of the shaft 40 as well as operating the ribbon reverse.



5. Carriage

V. Carriage.

a) Slide carriage and runway casting.

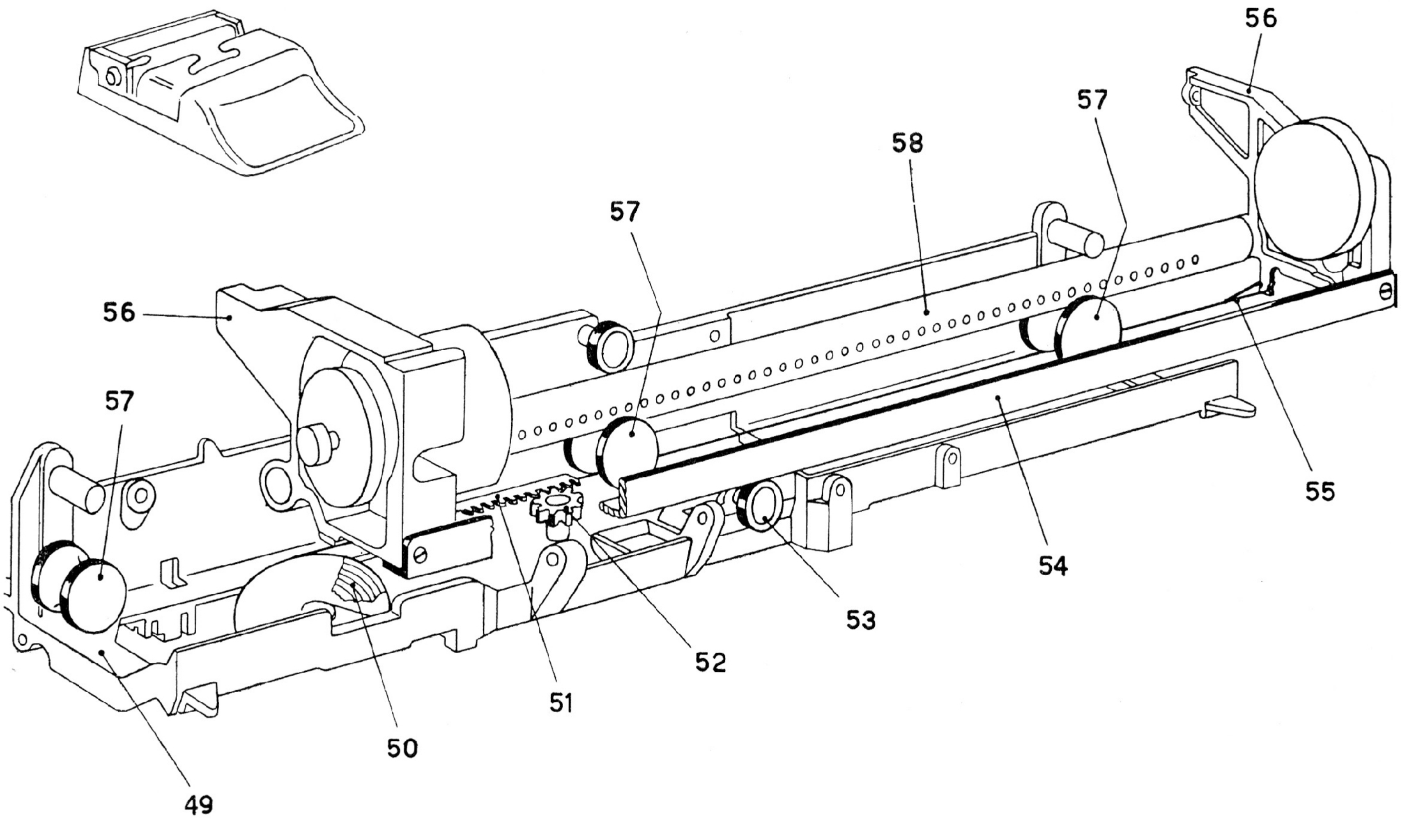
The slide carriage is composed of two side pieces 56, tabulator tube 58 and front rail 54.

The groved rollers 57 and the ball-bearing 53 on which the tube and the rail of the slide carriage run are mounted on the fixed guide 49.

b) Carriage main spring.

The slide carriage has a constant tension towards the left due to the spring 50 through the draw band 55.

The movement of the slide carriage is controlled by the escapement (following page); the pinion 52 of the escapement is always in mesh with rack 51 clamped to the two sides of the slide carriage itself.



NOTES

6. Escapement

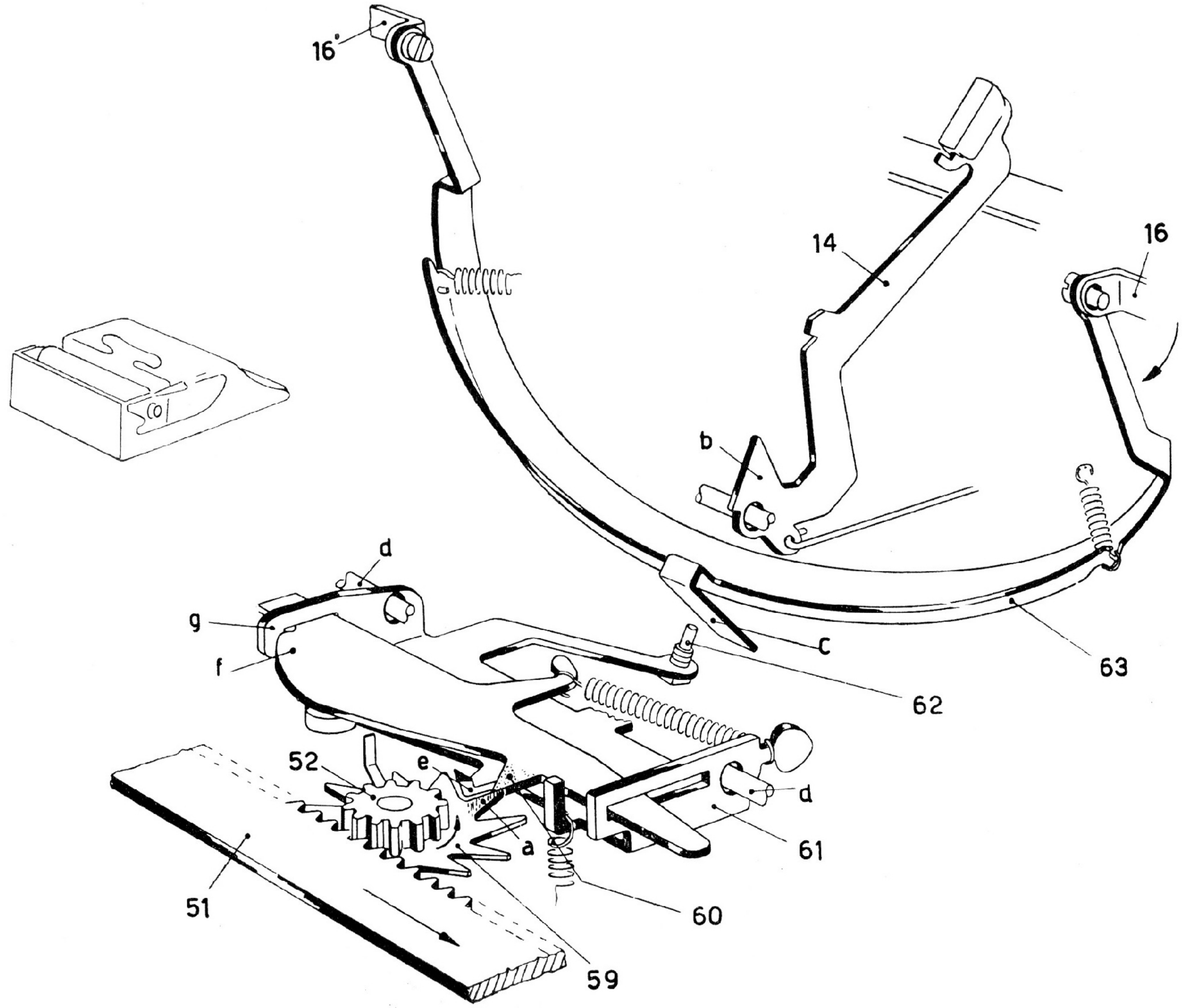
VI. Escapement.

a) Normal position and first trip.

The escapement pinion 52 and wheel 59 are integral. Rack 51, clamped on the slide carriage is continually in mesh with the escapement pinion 52.

The slide carriage through the action of the main spring (chapter V) is moved in the direction shown by the arrow but it is held in the static position by the loose dog 60 which meshes with tooth **a** of wheel 59.

When a typing key is depressed, the typebar 14 moves towards the platen, its flank **b** makes the universal bar frame 63 turn in the direction shown by the arrow; the universal bar frame is pivoted on arm 16 and 16′ of the segment plate. The lower tongue **c** of the universal bar frame 63 acts on trip screw 62 and the rocker plate 61 turns on the pins **d**. The loose dog 60 follows the movement of the rocker and disengages from wheel 59; under the action of the main spring, the slide carriage moves in the direction shown by arrow until tooth **a** of wheel 59 engages with the fixed tooth **e** of the rocker plate 61 (position shown in the following page). This is the function of the first trip of the escapement.



b) *Second trip.*

Figure 1 shows the position of the escapement mechanism after the «first trip»; with the loose dog 60 completely to the left under the action of spring 64 ready to engage with the next tooth **a** of the escapement wheel 59.

When the typing key is released, the type bar returns to its normal position and at the same time under the action of spring 65 the universal bar 63 frame is returned.

Under the action of its spring the rocker plate 61 is lowered, thus disengaging the fixed tooth e from the escapement wheel tooth **a**; under the action of the main spring the slide carriage moves and turns the escapement wheel 59 so allowing the loose dog 60 to engage with tooth **a′** and arrest the carriage. The loose dog 60 movement is limited by the shoulder **f** butting against the rocker plate side **g**.

c) *Silent return.*

The silent return 66 (figure 2) is pivoted on the shaft 54 of the escapement wheel; it is held friction tight against the wheel by a special spiral spring. When the slide carriage is moved from left to right, the wheel 59 turns in the direction shown by the arrow, dragging the silent return 66 in the same direction. Arm **m** of the latter pushes away the loose dog 60 from the teeth of wheel 59 preventing the loose dog riding over the teeth of the wheel.

When the carriage resumes its normal forward movement the silent return 66 returns to normal position dragged by wheel 59.

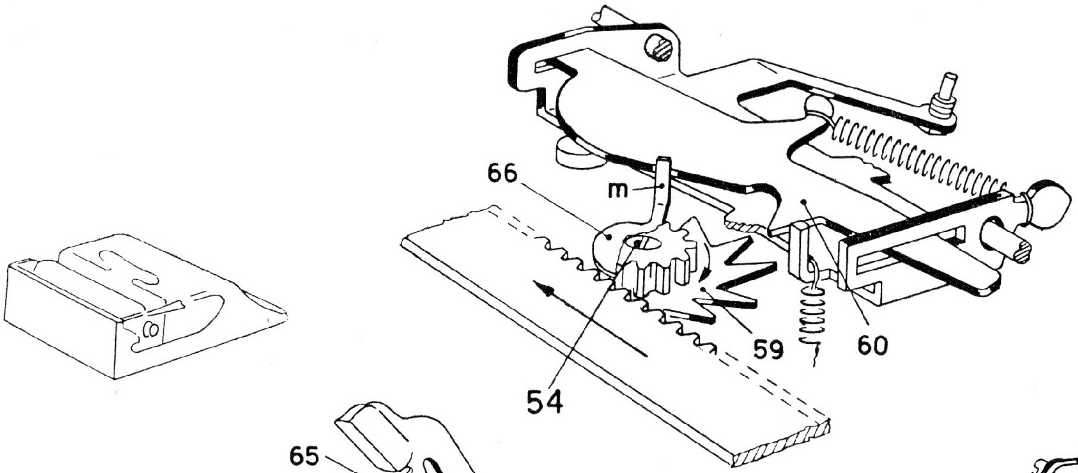


Fig. 2

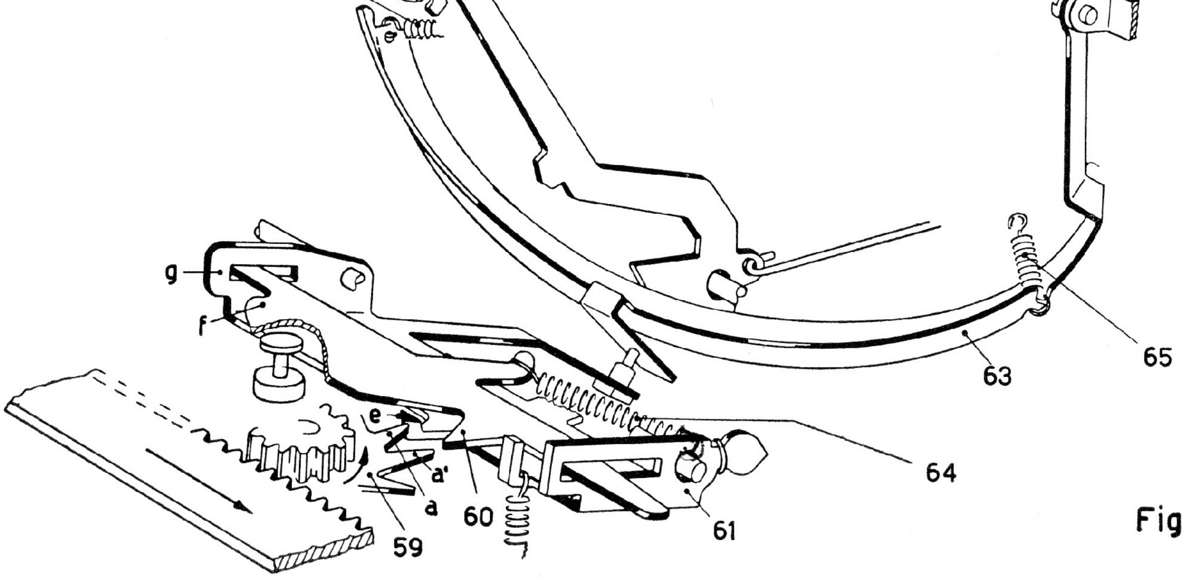
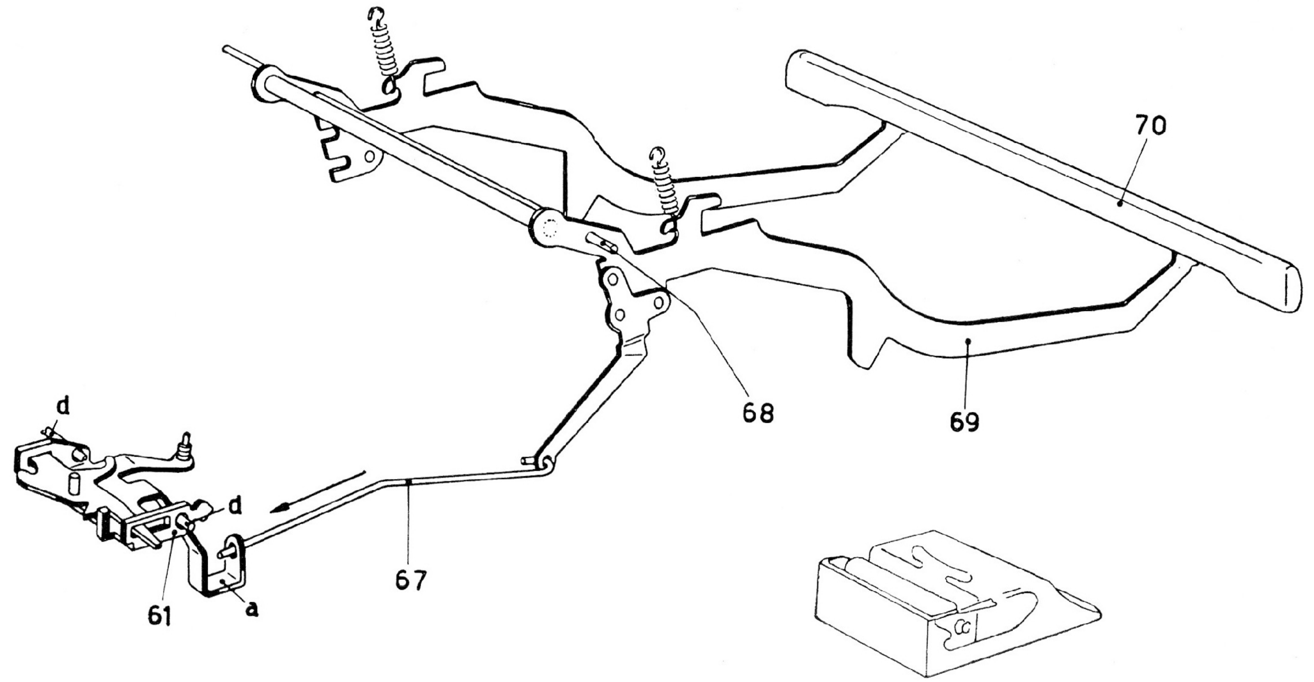


Fig. 1

d) Space bar.

When the space bar 70 is lowered, frame 69 rotates on its fulcrum rod 68; link 67 is pushed in the direction shown by the arrow and acting on **lug a of rocker plate 61,** causes the movement described on the preceding page (first and second trips, figures on page 29 and 31).

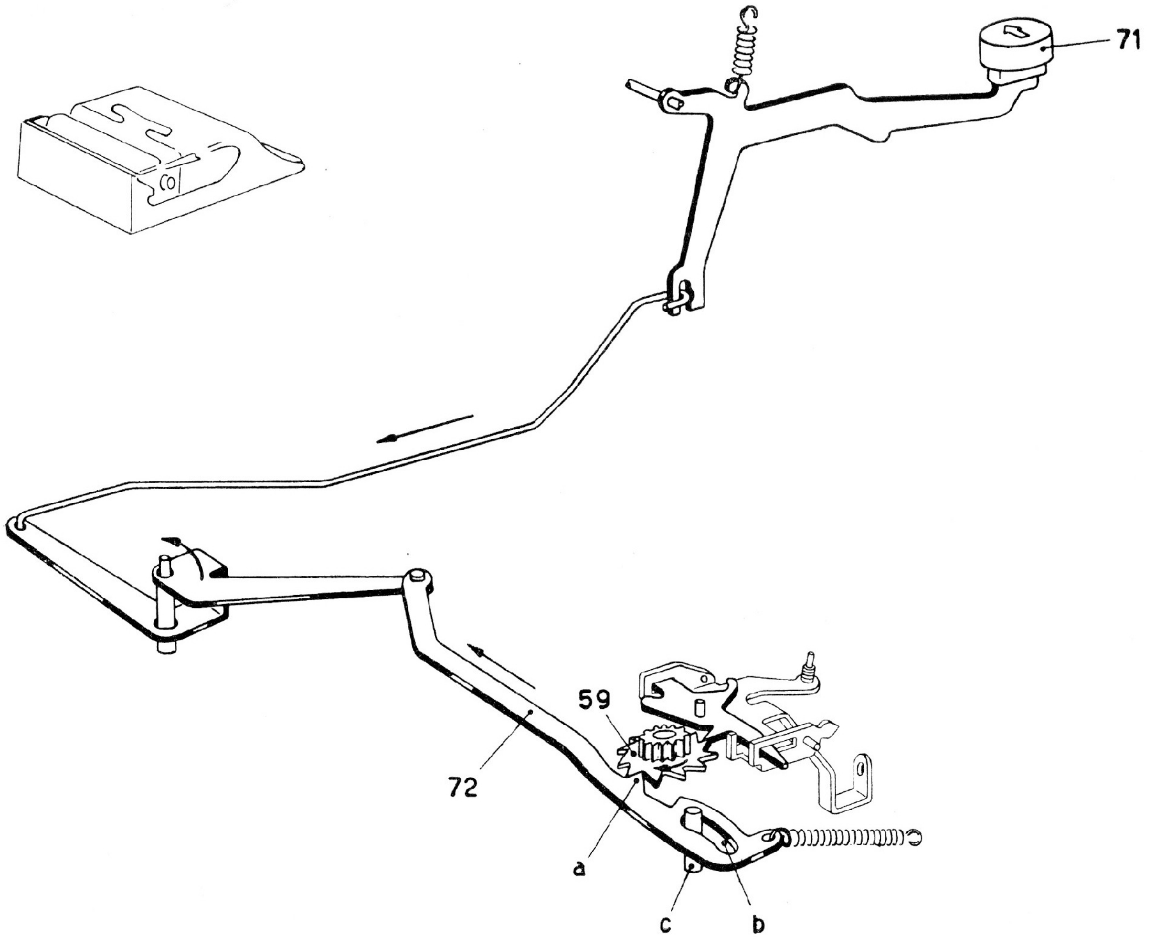


7. Back Spacer

VII. Back spacer.

When the « back space » key 71 is depressed, the corresponding link moves the lever 72 in the direction shown by the arrow. Tooth **a** of the latter turns the escapement wheel 59 one tooth causing the slide carriage also to return one space.

When the back space key is released, lever 72 returns to its normal position passing above the teeth crests of the wheel 59 due to the path travelled by pin **c** in slot **b.**



8. Tabulator

VIII. Tabulator.

a) Setting and clearing the stops.

The stops 80 of the tabulator are carried on the tabulator tube 58 of the slide carriage; the distance between two adjacent stops is equal to the pitch of the machine.

The lever 78 (figure 1) effects the setting and clearing of the stops.

When the lever is moved to position I, link 77 turns the frame 75 towards the back of the machine; with its tongue **a**, frame 75 makes the setter 74 turn in the same direction, so setting a stop 80 (fig. 3).

When lever 78 is moved to position II, frame 75 and clearer 81 turn in the opposite direction clearing the stop which has been previously set (fig. 4). The stops are held friction tight in the tube by a special helical spring 79 which runs along the whole length of the tabulator tube 58.

b) Clearing all the stops.

All the stops set can be cleared at the same time by bringing lever 78 to position II and making the slide carriage complete its full lateral movement. The clearer 81, will in fact function for both movements of the carriage i.e. left to right and right to left due to the inclined clearing faces **b** and **b**′.

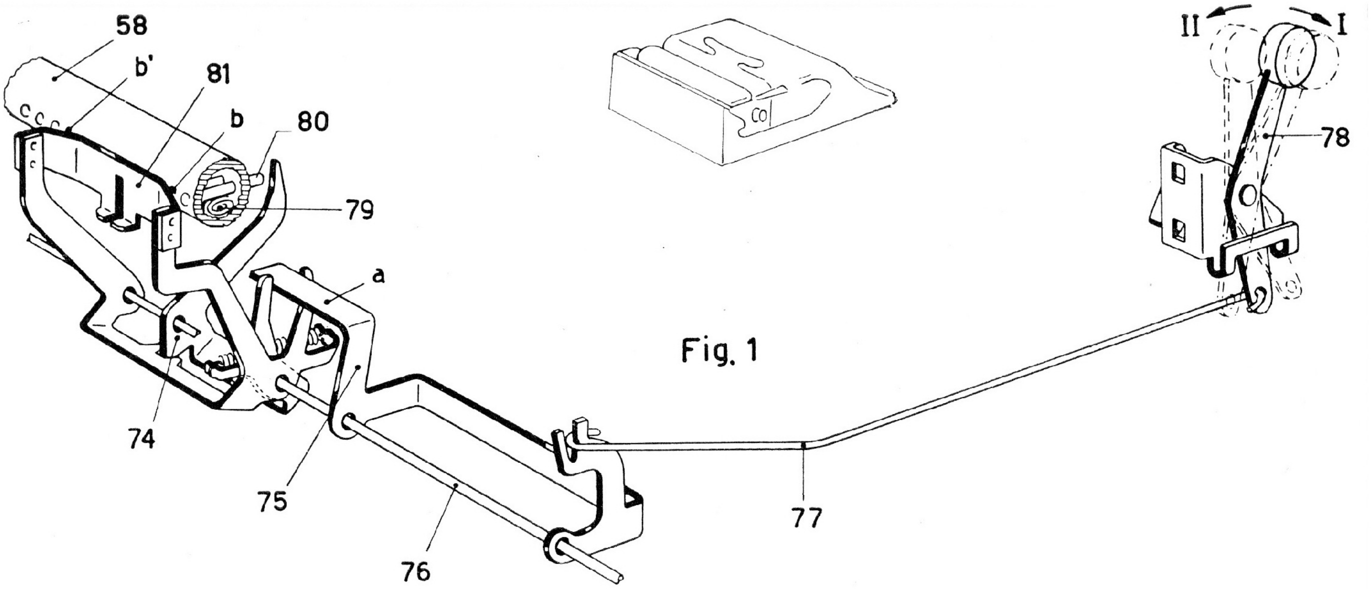


Fig. 1

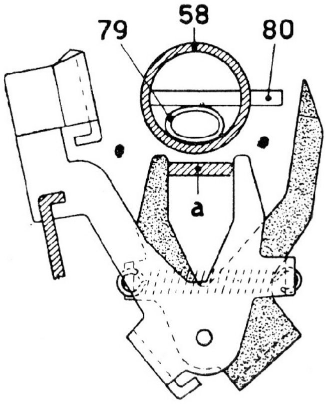


Fig. 2

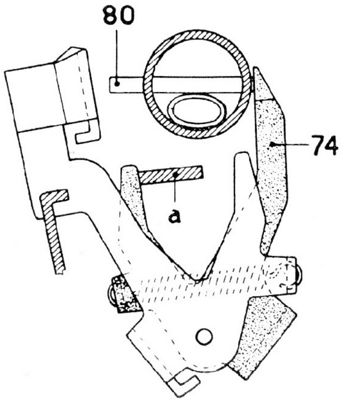


Fig. 3

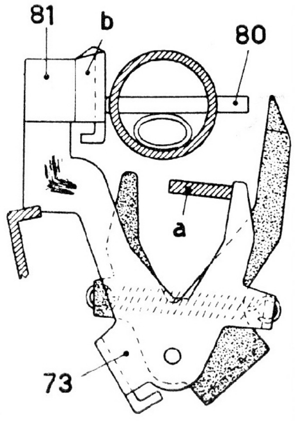


Fig. 4

c) Tabulator key.

Figure 1 shows the tabulator control mechanism in the normal position.

When the tabulator key 89 is depressed, the corresponding link pushes the lever 82 in the direction shown by the arrow and so imparts a rotary motion to the frame 85.

This motion causes:
— the brake 84 under the action of the spring 83, to bring its shoe **a** in contact with the tabulator tube 58.
— the small link 86 to raise the tabulator finger 87 to the position where it can intercept a set stop.
— the link 88 to move in the direction shown by the arrow, so disengaging the loose dog 60 from the escapement wheel 59.

After these three operations have taken place as shown in figure 2, the slide carriage under the action of the main spring, starts its movement which is braked by shoe **a** and is arrested when the tabulator finger 87 intercepts the stop 80.

When the tabulator key 89 is released, the mechanism listed above return to the normal position. Loose dog 60 re-engages with the escapement wheel 59 and the slide carriage returns to its normal position after the escapement has practically finished the second trip (page 30).

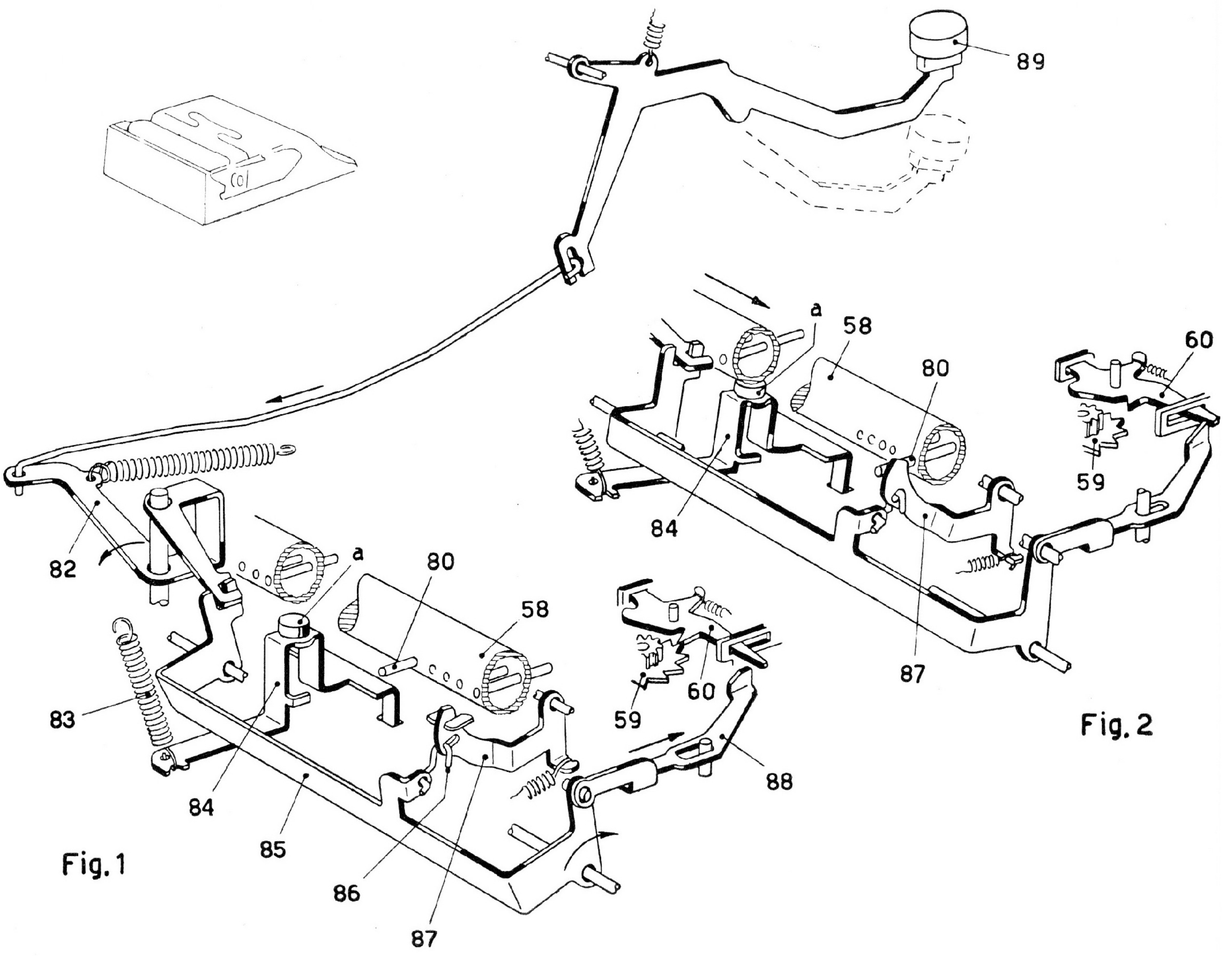


Fig. 1

Fig. 2

9. Margin Stops

IX. Margin stops.

a) Setting the margin, end of line signal and carriage stop.

The margin rack 93 is secured between the two sides 56 of the slide carriage; the L.H. margin stop **S** and the R.H. one **D** (figure 1) engage in the rack under the action of the leaf spring 91.

To set the margin stops as desired, it is only necessary to depress them thus releasing them from engagement with the teeth of the rack 93; then move them along the rack itself.

The L.H. margin stop **S** determines the extreme L.H. position of the typing. It stops the movement of the slide carriage when its shank **a** comes in contact with lug **b** of the margin release bar 92.

The R.H. margin stop **D** in addition to limiting the R.H. margin operates the bell, which rings several spaces before the end of the line. Its tongue **c**, moving hammer 95, rings the bell which warns the operator that the end of the typing line is approaching. When the last space is reached, the release bar 92 is moved by tongue **d** butting against lug **b** and the bar stops against nut 90. In this manner the slide carriage is stopped.

b) Locking the keyboard.

This movement of the margin release bar 92 which occurs, as we have already said, during the last typing space of the slide carriage, causes the rotation of the locking bar 97 on the pins **e** and **e**′. The bar 97 moves the locking plate 96 to the left, so locking the key levers and, at the same time, with its tongue **f** locks the space bar.

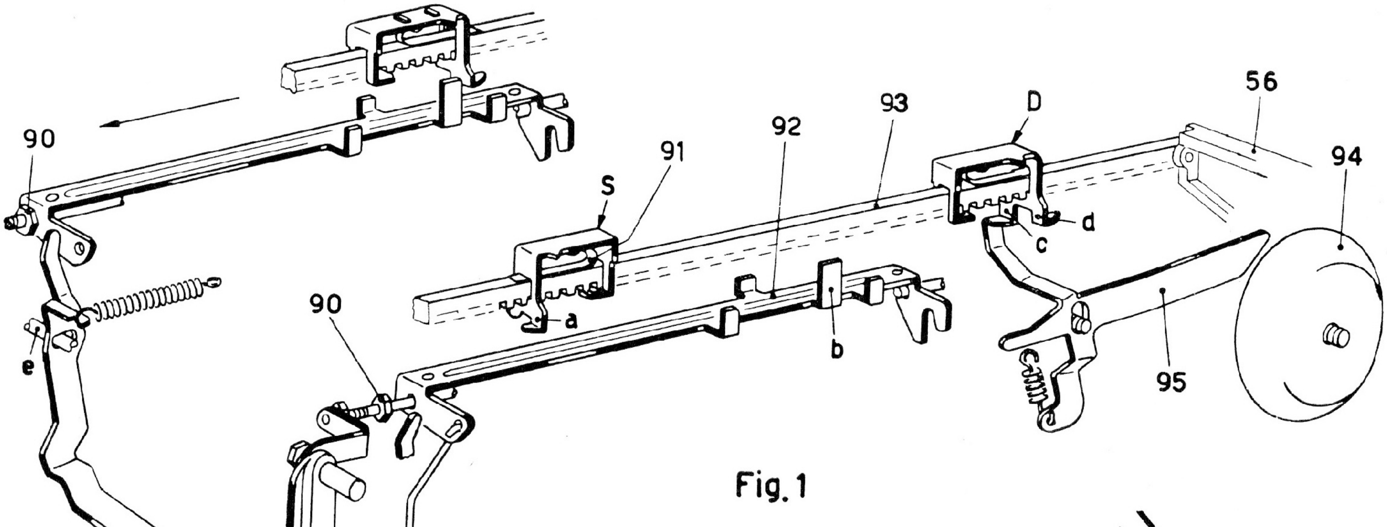


Fig. 1

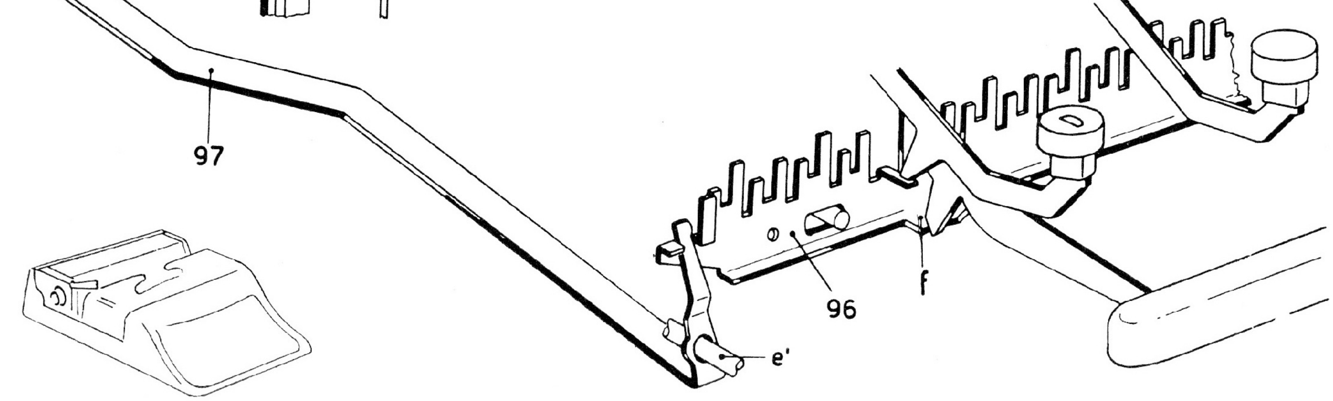


Fig. 2

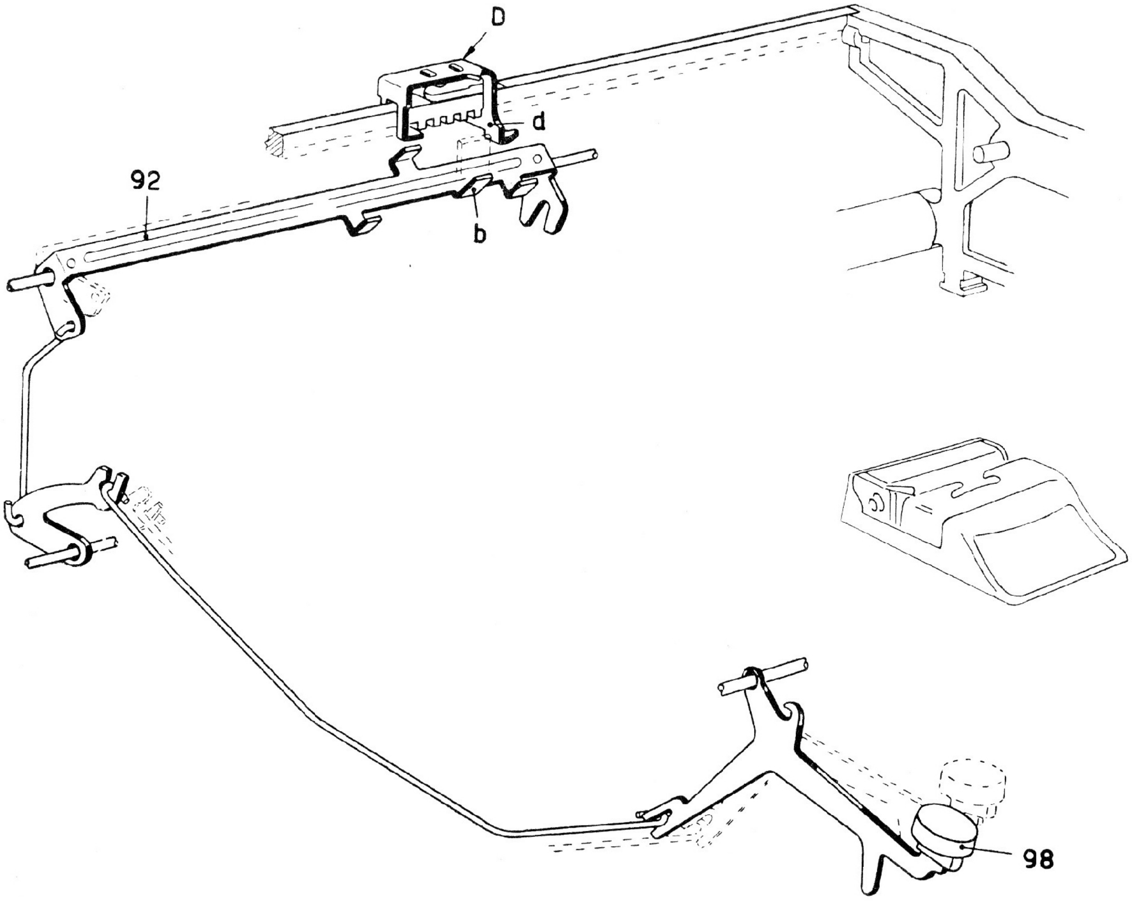
c) Margin release.

The dotted line shows the margin release mechanism in the normal position. When the slide carriage has reached the last space, tongue **d** of margin stop **D** is in contact with lug **b** of the release bar 92.

When the margin release key 98 is depressed, the bar 92 rotates and the lug **b** releases tongue **d** of the margin stop. It will now be possible to type beyond the R.H. margin which has previously been set.

By bringing the slide carriage back to the beginning of the line, the margin stop **D** can « pass over » the stop lug **b** due to the inclined face of its tongue **d**.

Depression of the margin release key will also release the L.H. margin **S**, allowing typing before the actual set stop.



d) Slide carriage final stops.

We have seen that as a result of the lowering of the margin release key, the margin stop **D** has passed over the lug **b** of the bar 92 (figure 2).

The slide carriage can therefore continue further and will stop when the R.H. side 56 of the carriage reaches lug **c** of the bar 92.

Similarly passing over the L.H. margin stop, the carriage stops against lug **a** of the bar 92.

e) Paragraph indentation.

For starting a paragraph, i.e. a line indented in relation to the position of the L. H. margin stop, it is only necessary to hold the margin release key down while the carriage is brought back to the beginning of the line.

The carriage will stop as soon as the tongue **e** of the margin stop **S** comes in contact with the lug **f** of the release bar 92 which is some spaces before the normal L.H. margin.

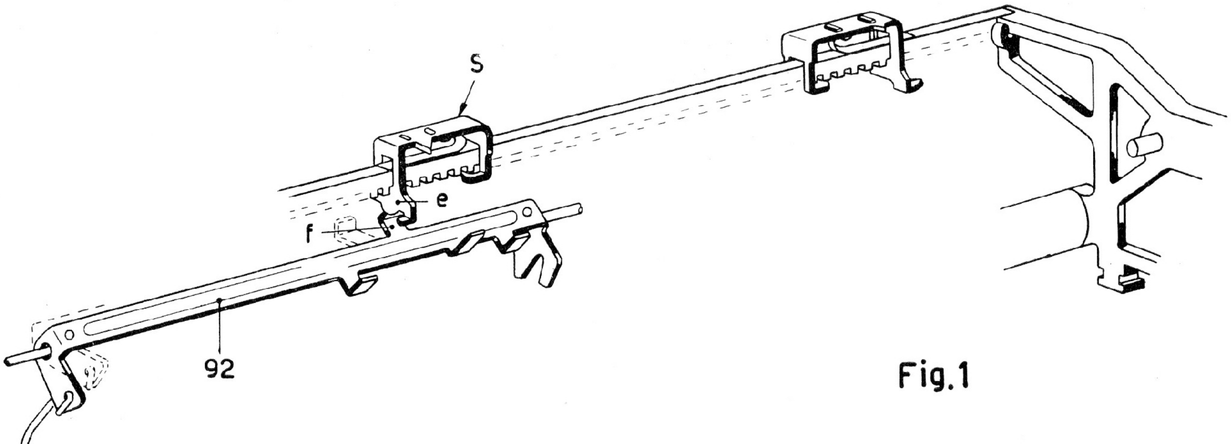
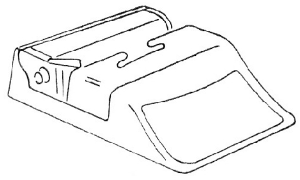


Fig.1



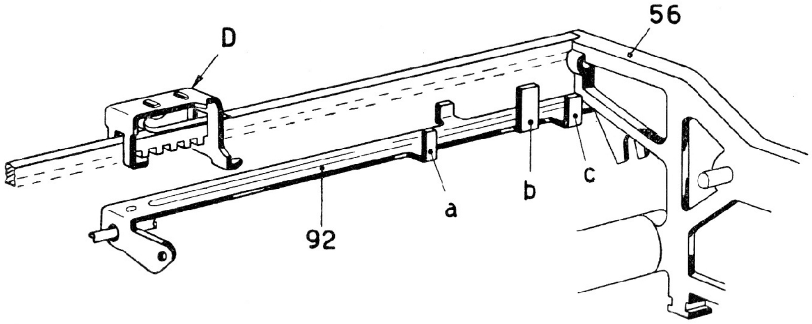


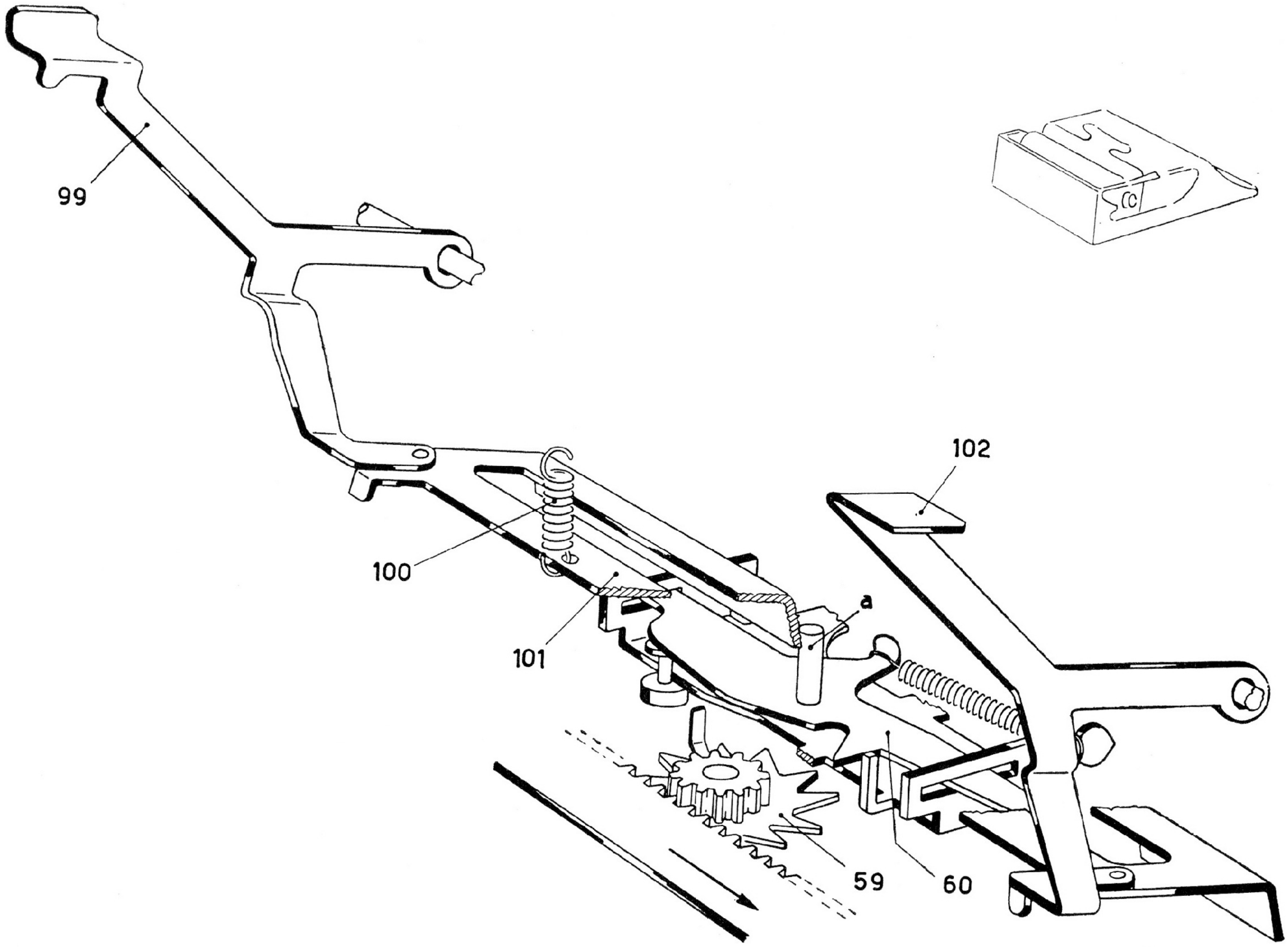
Fig.2

10. Carriage Release

X. Carriage release.

When either of the two carriage release levers 99 or 102 are depressed, the release frame 101 pushes pin **a** so disengaging the loose dog 60 from the escapement wheel 59. Therefore the carriage is released and will move from right to left under the action of the main spring.

When the levers 99 or 102 are released, the carriage release frame 101 returns to its normal position under the action of spring 100. This movement allows the loose dog to re-engage with the escapement wheel 59.



11 & 12. Line Spacing and Carriage Return

XI. Line spacing and carriage return.

The platen is held in position by the line space ratchet 103, which is locked by the detent roller 105 (figure 1). Turning the line space lever 109 (figure 1) in the direction shown by the arrow, makes the platen line space as set and carries the carriage back to the L.H. margin.

The function of the mechanism is, that the lever 109 turns the crank 106 in the direction as shown, this pulls the link 110 which turns the pawl assembly 111 in the direction **z**. The pawl 112 follows and under the action of its spring tends to turn in direction **v**.

Tongue **a** of the pawl 112 follows the contour of the cam 107 (figure 2) and its tongue **b** can only engage with the line space ratcher 103 when the tongue **a** has passed over the node **c** of the cam 107. Therefore the pawl 112 only works for the second part of the movement when it turns the line space 103.

The cam determines the four positions of the line spacing through the line space selector 108 (figure 2). By moving the cam 107 via the selector the path travelled by the pawl 112 on the cam is either increased or decreased, with the consequence that the working part of the pawl's movement is increased or decreased.

The maximum movement of the pawl 112 is governed by the stop **d** of lever 104 (figure 1).

XII. Setting the line spacing.

a) Zero position.

Figure 2 shows this; in this position the complete movement of the pawl is inactive; i.e. it will not engage with the ratchet 103. In addition, the arm **f** of cam 107 pushes out of engagement the detent roller 105, completely disengaging the platen from the line space mechanism.

In this manner a position may be reached between any two lines of typing if required.

When the selector 108 is moved to any of positions 1, 2 or 3, the detent roller 105 re-engages with ratchet 103, and turning the platen it is possible to return to the alignment of the typing previously carried out.

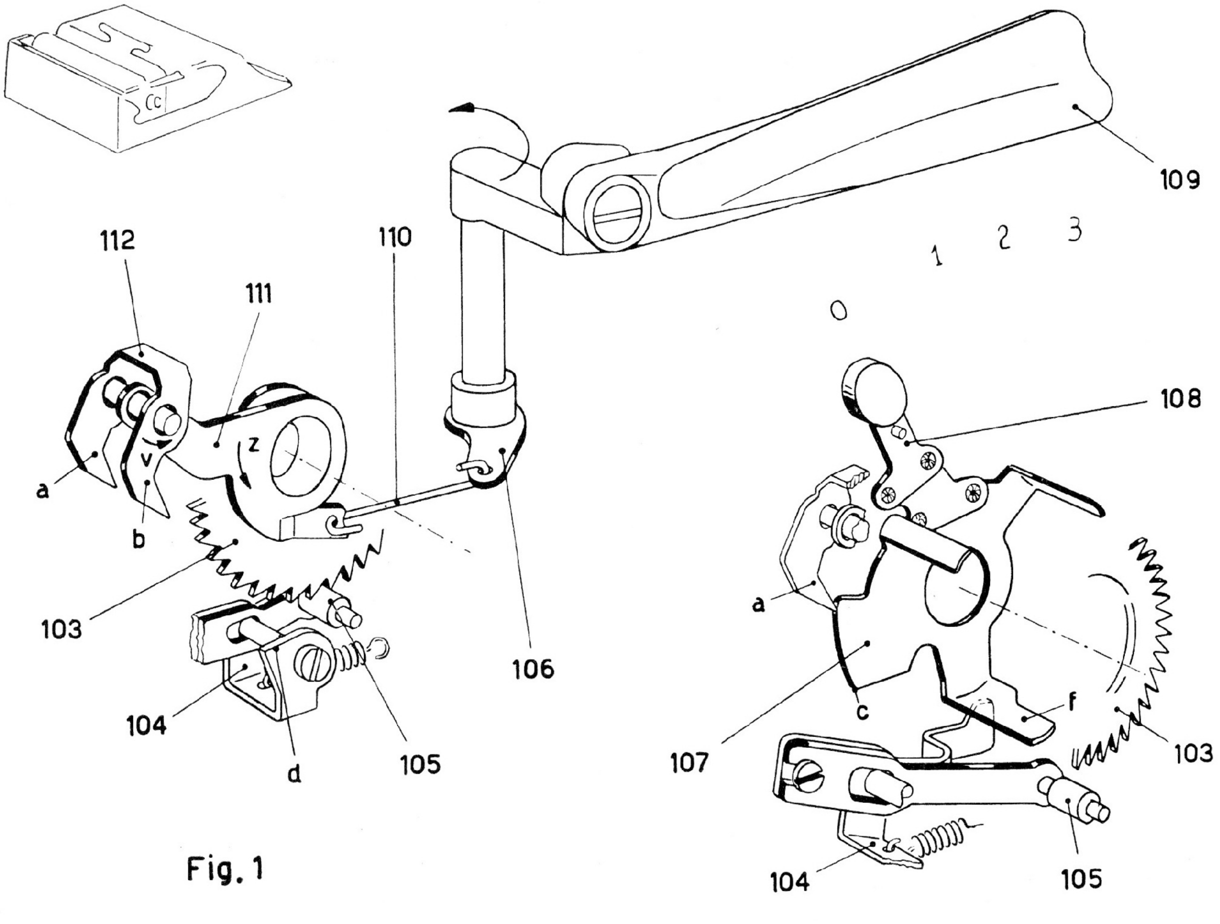


Fig. 1

Fig. 2

b) Positions 1, 2 and 3.

Figure 1 shows the path taken by the pawl 112 when the selector is in position 1. The dotted line shows that the ratchet rotates through an angle equal to two teeth.

In figure 2 the line spacing lever is in position 3. In this case the ratchet goes through a rotation equal to four teeth.

It follows that in position 2 the line spacing wheel makes a rotation equal to three teeth.

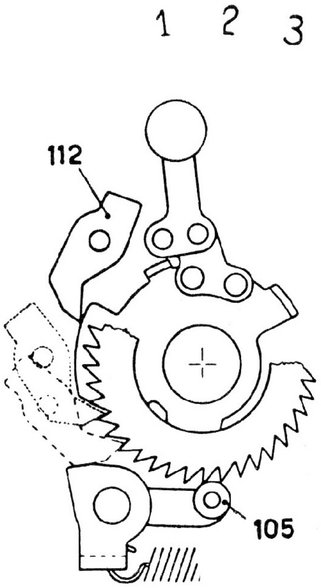
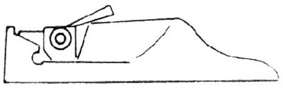


Fig. 1



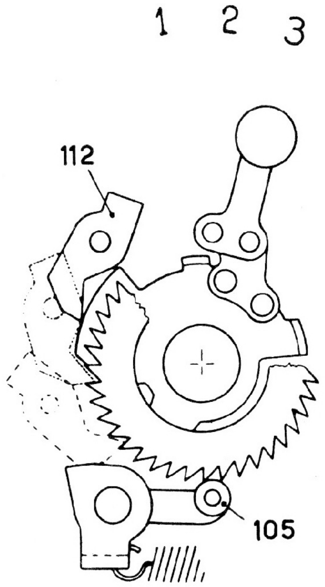


Fig. 2

13. The Clutch and the Platen

XIII. The clutch and the platen.

The threaded end **a** of the clutch shaft 117 screws into the platen; on the end **b** the L.H. platen knob 113 is assembled.

The line space ratchet 103 is coupled to the shaft by the internal splines **c** meshing with the teeth **d** of the clutch fixing plate 118. The internal splines of the fixing plate move along the teeth **e** of the shaft 117 when the clutch is operated.

The clutch operating piston 115 with the knob 114, is secured to the plate 118 by means of the pin 119 which can slide in the slot **f** of the shaft 117.

In the unoperated position the compression spring 116 pushes the knob 114 outwards (position in figure 1) so that the teeth **d** of the plate 118 mesh with the splines **c** of the ratchet 103.

In this condition the platen and clutch operate together; i. e. if the ratchet turns the platen will also turn the same amount.

However, when the knob 114 is depressed, pin 119 disengages the fixed plate teeth **d** from the internal splines **c** of the ratchet (position in figure 3) so that there is now no connection between ratchet and platen. The latter may now be turned as desired whilst the ratchet 103 is locked by the detent roller 105.

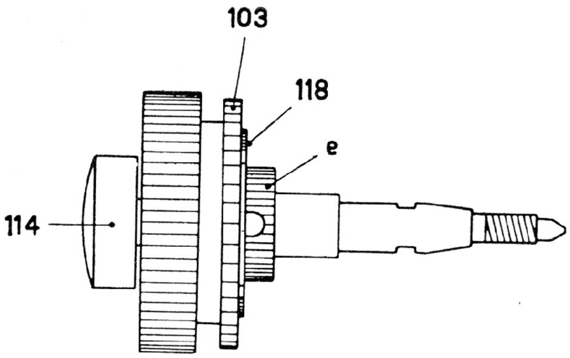


Fig. 1

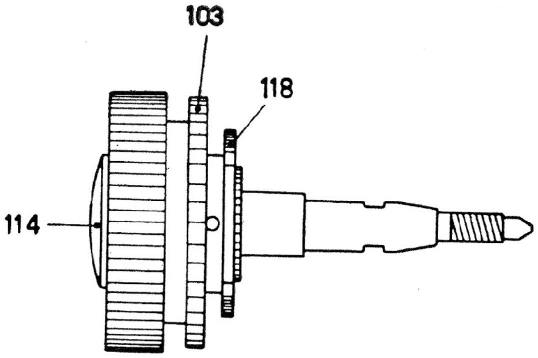


Fig. 3

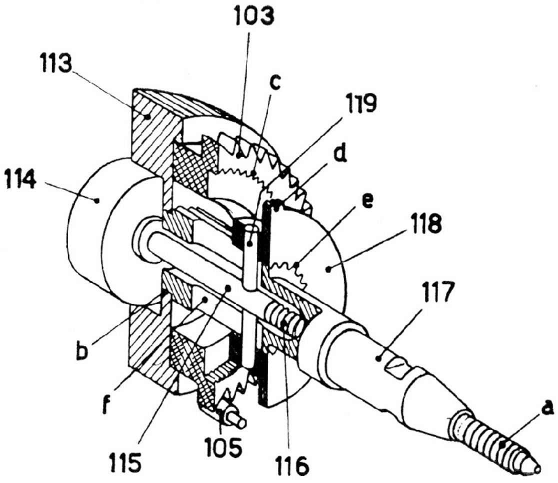
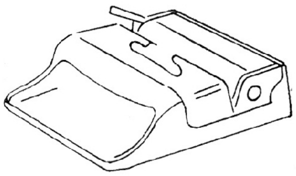


Fig. 2



NOTES

14. Paper Feed Rollers

XIV. Paper feed rollers.

The paper is guide around the platen 12 by the paper pan 125.

There are slots in the latter through which the front feed rollers 123 and the rear faced rollers 126 project towards the platen. The front rollers 123 are a push fit on the shaft 122 and the rear rollers 126 a push fit on the shaft 127. The shafts 126 and 127 are held, at each end of the carriage, by a pair of levers 129 and 130 respectively; the pin **b** is the fulcrum point for the levers.

a) Position when closed.

This is shown in the figure and is determined by the position of the paper release lever 124. The front and rear rollers are in contact with the platen 12 and exert a certain pressure against it through the action of the springs 128. The paper pan is held against the platen by a small leaf spring underneath it.

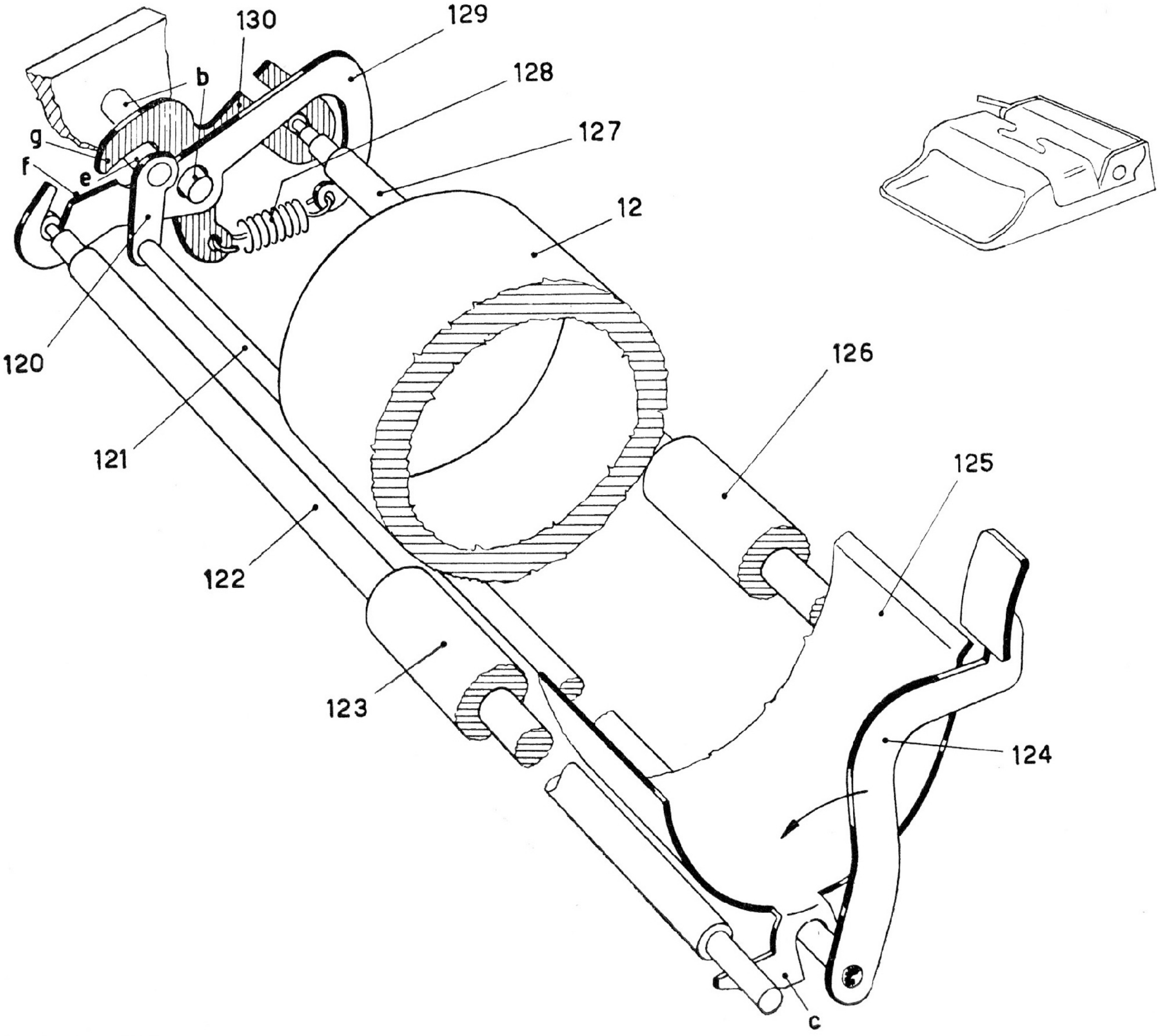
b) Position when open.

When paper release 124 is moved towards the front of the machine, the corresponding shaft 121 rotates in the same direction. As a result the pins **e** on the shaft:

— push levers 129 downwards acting on their edges **f**

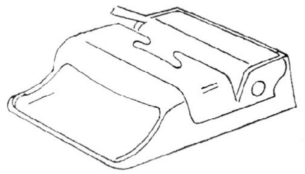
— raise the levers 130 acting on their edges **g**.

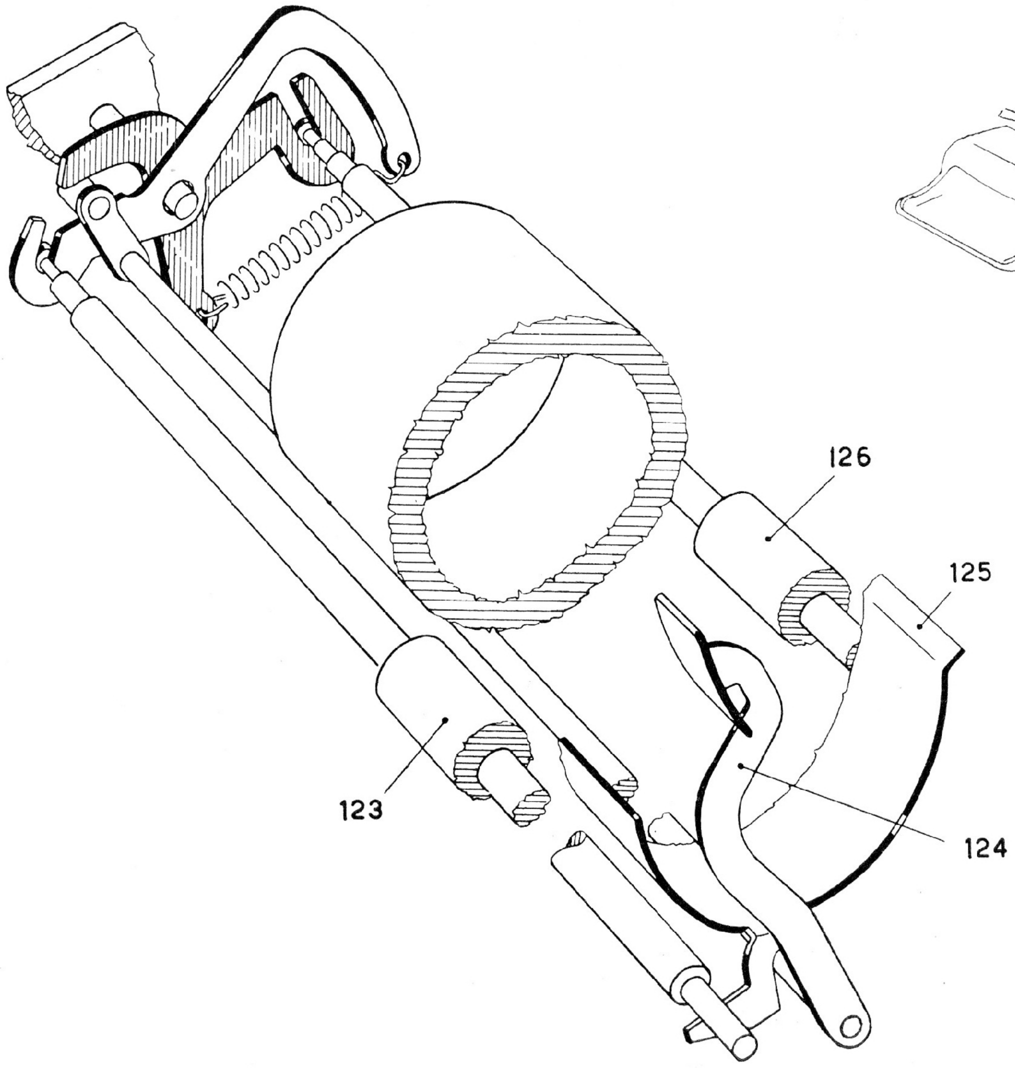
Consequently the paper feed rollers are moved away from the platen. In addition, the front feed roller shaft 122 acting on the tongue **c** of the paper pan moving the paper pan away from the platen.



c) *Position when open.*

The figure shows the position of the paper release lever 124 when ready to operate. The front rollers 123, the rear rollers 126 and the paper pan 125, are a little distance away from the platen.





Instructions for Assembling and Adjusting the LL 22

The figure at the side shows the composition of the fortythree cinematics schematically. Whe shall refer frequently to it as it shows clearly the direction in which the links and the sublevers are hooked.

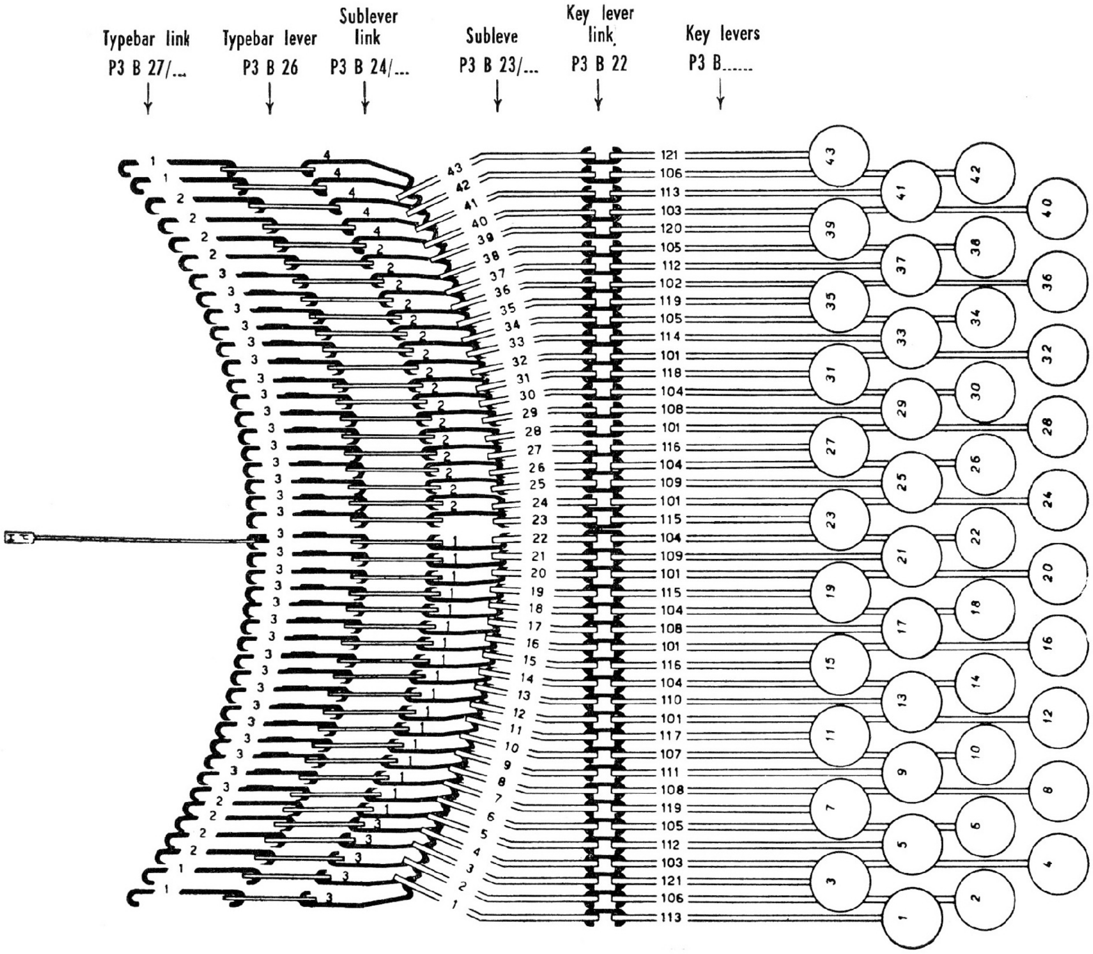
The keys are numbered progressively starting from the first on the left.

When, for example, we say the first movement lever of the twentysecond cinematic we mean the twentysecond cinematic starting from the left and corresponding to key number 22 (letter **H**).

N.B. - In the descriptions which follow R.H. and L.H. should be understood to be when looking at the machine from the front, i. e. with the keyboard towards the operator.

P3	B	27/1÷3	Typebar link
P3	B	26	Typebar lever
P3	B	24/1÷4	Sublever link
P3	B	23/1÷43	Sublever
P3	B	22	Key lever link
P3	B	101÷121	Key levers (1)
P3	E	3	Typebar

(1) See figures 2 - 3 - 4 - 5.


Typebar link
P3 B 27/...
Typebar lever
P3 B 26
Sublever link
P3 B 24/...
Subleve
P3 B 23/...
Key lever link
P3 B 22
Key levers
P3 B......

1 - FIGURES 1 - 2 - 3 - 4 - 5 - 6

Assembling the key levers, space bar shaft and the shift lever frame.

a) Place the arm of the space bar shaft P3 GH 102 in the appropriate guide slots of the key lever comb P3 A 5 and also the arms of the shift lever frame P3 GG 103. Insert the key lever fulcrum rod P3 B 28 in the guide hole of the comb P3 A 5; advance it so that both the P3 GH 102 and P3 GG 103 are pivoted on it. The parts must be perfectly free to rotate; this condition is reached by flexing the arms as required.

Remove the fulcrum rod.

b) In the guide slots of the key lever comb P3 A 5 place:

— the margin release key lever P3 Q 104
— the fortythree key levers
— the back spacer key lever P3 N 101
— the tabulator key lever P3 V 1.

Only the margin release back spacer and tabulator key levers are shown in figure 1.

To assemble the fortysix key levers mentioned, use the fulcrum rod with a reduced diameter UA 8058/4. When the assembly is completed, insert the fulcrum rod P3 B 28, at the same time slipping out the previously used UA 8058/4.

N.B. — The fortythree key levers are designated by the code symbol P3 B 101÷121. Therefore we have twentyone different key levers to complete the keyboard.

Figures 2, 3, 4, 5 show the key levers and the schematic on page 61 indicates the proper order in which the assembly of these levers should be carried out.

Figure 6 shows the margin release, back spacer and tabulator levers.

c) Check that the fortysix levers are perfectly free to rotate.

d) Hook spring P3 G 15 between the L.H. shift lever and the shift lock key (figure 1).

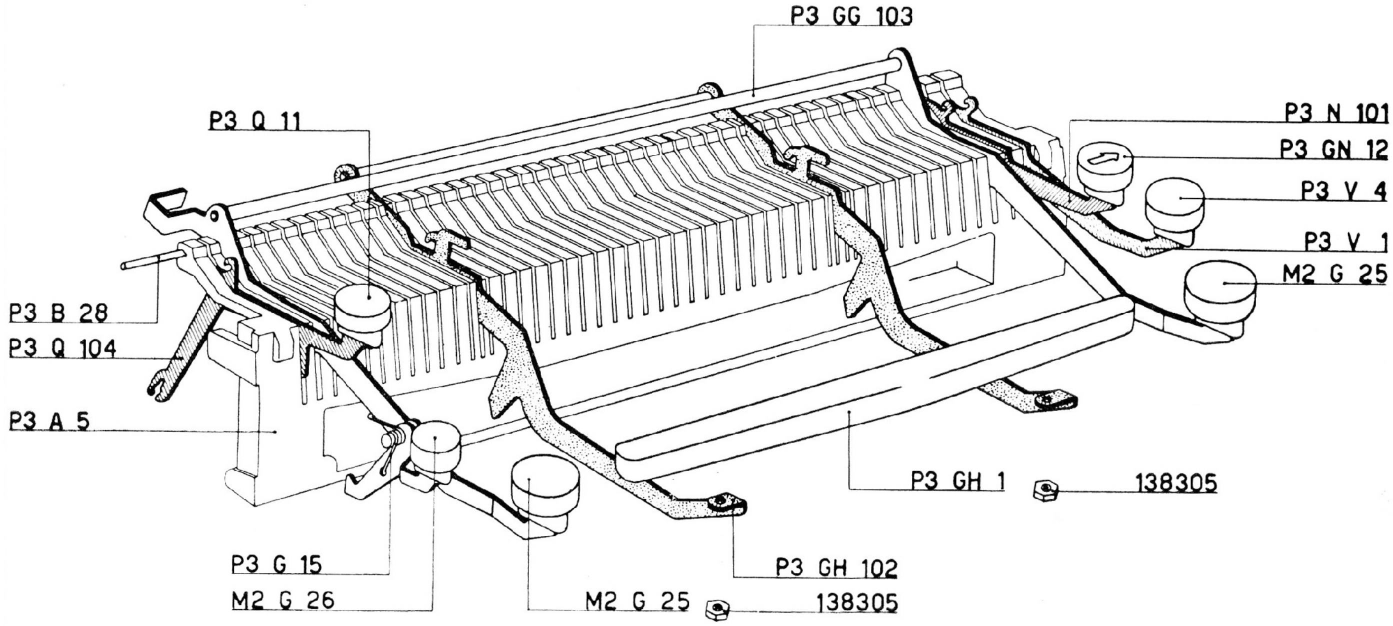
e) Place the space bar P3 GH 1 in position on the two arms of the space bar assembly and secure with two nuts 138305 (figure 1).

Important.

The key tops of the Lexikon 80 are assembled on the fortythree levers of the keyboard.

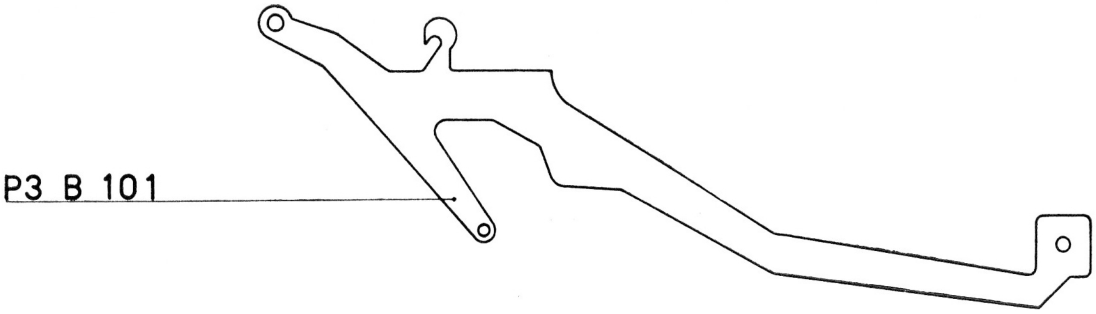
P3 A 5	Key lever comb
P3 B 28	Key lever fulcrum rod
P3 G 15	Shift lock spring
P3 GG 103	Shift lever frame
P3 GH 1	Space bar
P3 GH 102	Space bar lever assembly
P3 N 101	Back spacer
P3 GN 12	Back spacer key top

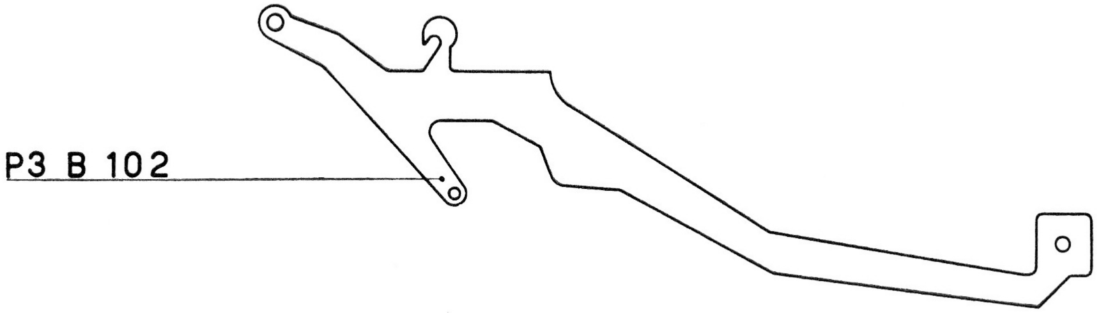
P3 Q 11	Margin release key top
P3 Q 104	Margin release key lever
P3 V 1	Tabulator key lever
P3 V 4	Tabulator key top
M2 G 25	Shift key top
M2 G 26	Shift lock key top
138 30 5	Hexagonal nut for clamping P3 GH 1.

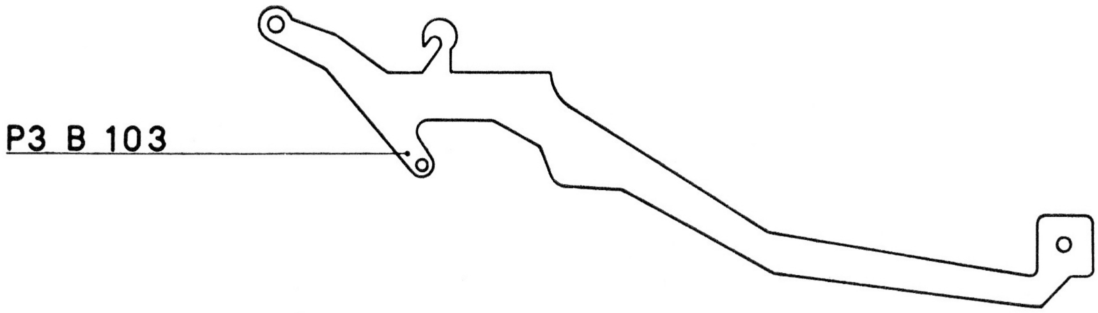


①

P3	B 101	Levers for keys Nos. 12, 16, 20, 24, 28, 32.
P3	B 102	Levers for keys Nos. 8 - 36
P3	B 103	Levers for keys Nos. 4 - 40

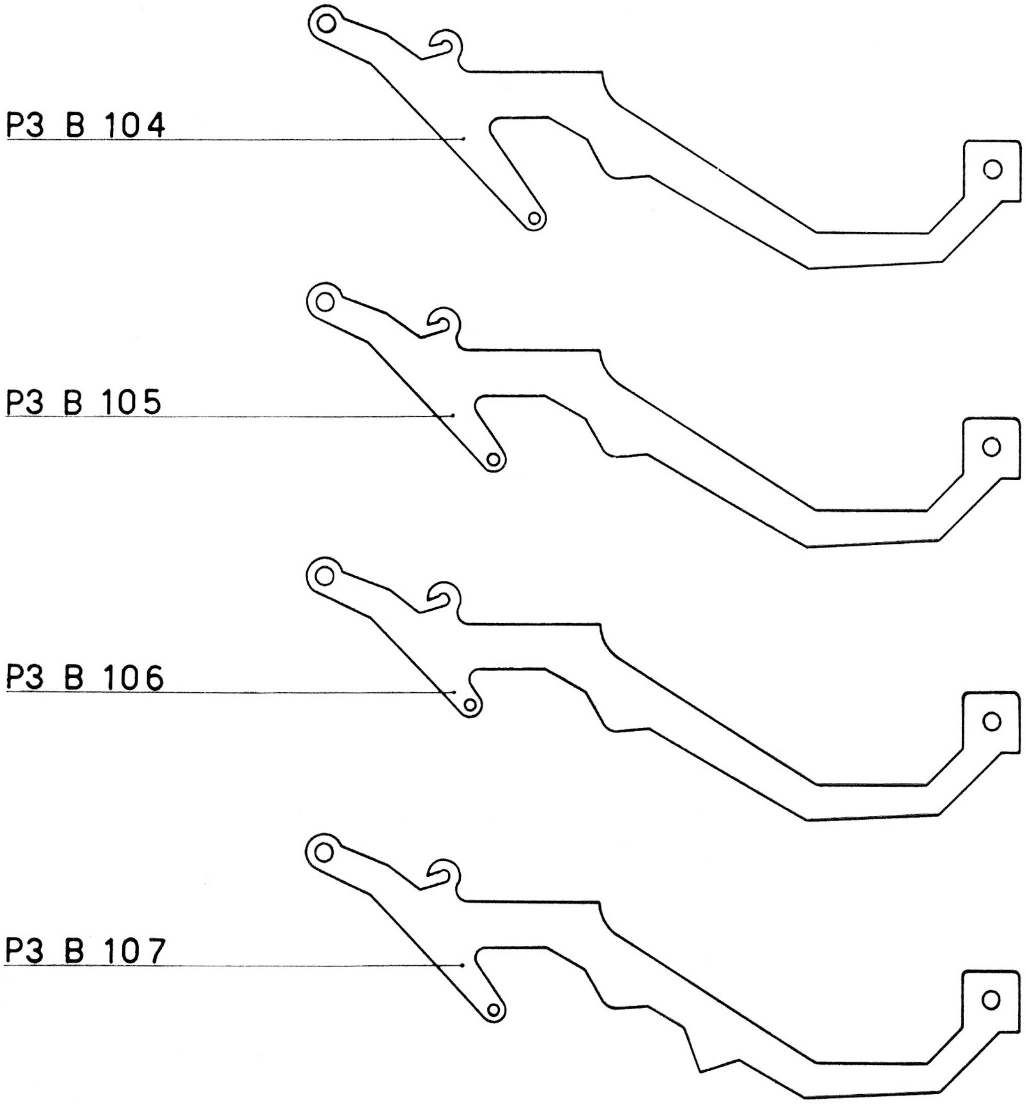






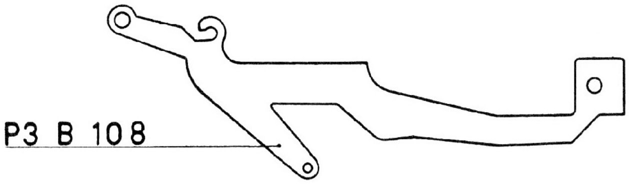
2

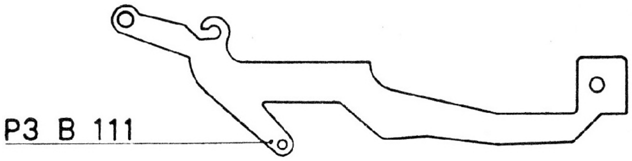
P3	B 104	Levers for keys Nos. 14 - 18 - 22 - 26 - 30
P3	B 105	Levers for keys Nos. 6 - 34 - 38
P3	B 106	Levers for keys Nos. 2 - 42
P3	B 107	Lever for key No. 10

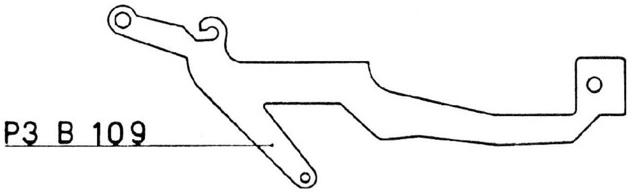

P3 B 104
P3 B 105
P3 B 106
P3 B 107

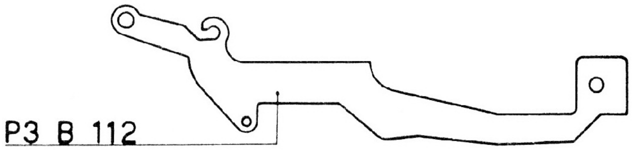
③

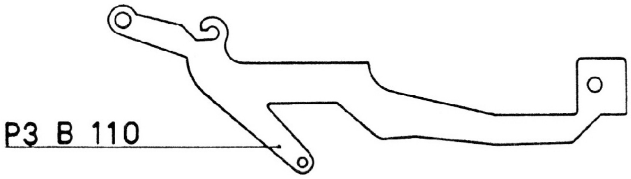
P3	B 108	Levers for keys Nos. 17 - 29
P3	B 109	Levers for keys Nos. 21, 25
P3	B 110	Lever for key No. 13
P3	B 111	Lever for key No. 9
P3	B 112	Levers for keys Nos. 5, 37
P3	B 113	Levers for keys Nos. 1, 41
P3	B 114	Lever for key No. 33

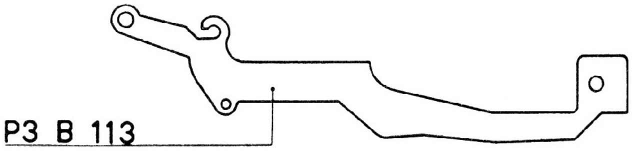

P3 B 108

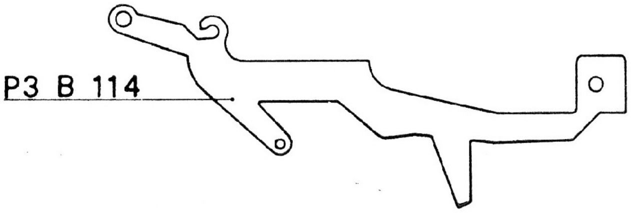

P3 B 111


P3 B 109


P3 B 112

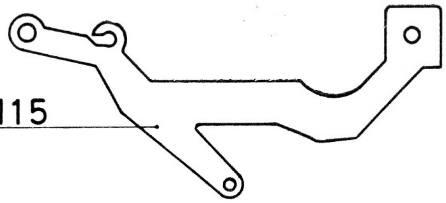

P3 B 110

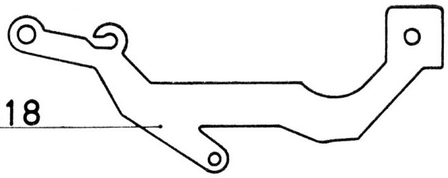

P3 B 113

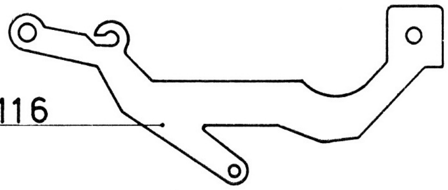

P3 B 114

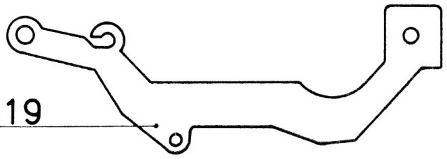
④

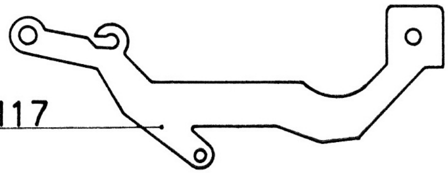
P3	B 115	Levers for keys Nos. 19 - 23
P3	B 116	Levers for keys Nos. 15 - 27
P3	B 117	Lever for key No. 11
P3	B 118	Lever for key No. 31
P3	B 119	Levers for keys Nos. 7, 35
P3	B 120	Lever for key No. 39
P3	B 121	Levers for keys Nos. 3, 43

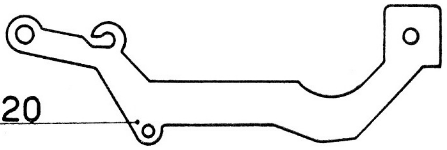

P3 B 115


P3 B 118

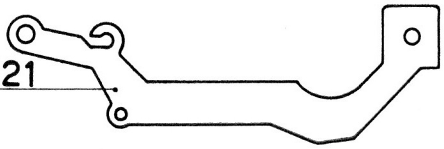

P3 B 116


P3 B 119

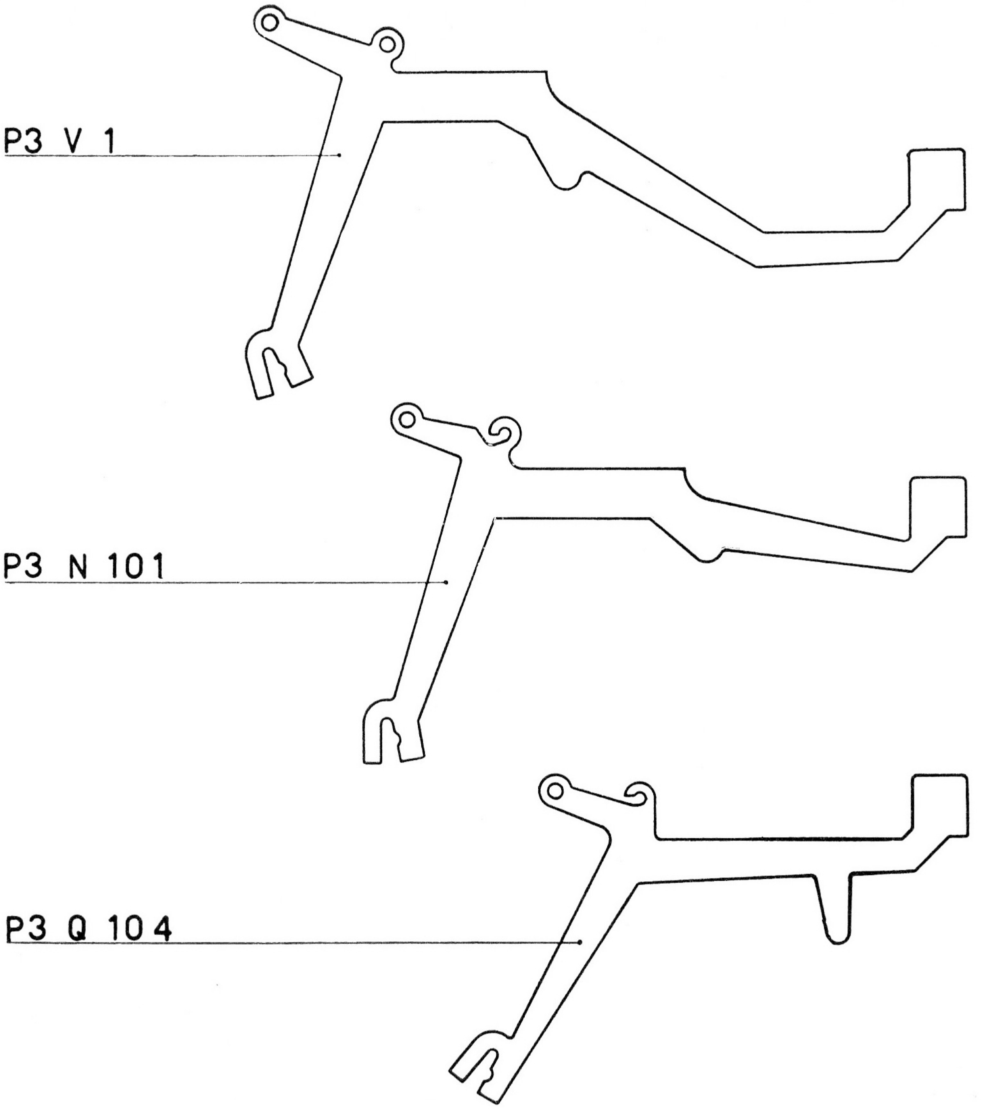

P3 B 117


P3 B 120

⑤


P3 B 121

P3	N 101	Back spacer key lever
P3	Q 104	Margin release key lever
P3	V 1	Tabulator key lever


P3 V 1
P3 N 101
P3 Q 104

⑥

2 - FIGURE 7

Assembling the key lever links and the sub-levers.

a) Hook the links P3 B 22 in the appropriate holes of the fortythree key levers, in the proper direction.

The schematic figure on page 61 shows the correct direction for hoocking them:

— The hooks of the links for the first twentytwo levers should be turned towards the left.

— The hooks of the remaining twentyone levers should be turned to the right.

b) The sub levers P3 B 23/1÷43 are assembled in progressive order as shown in the schematic on page 61 until key lever 23; then sub lever P3-B 23/20 is assembled in cinematic 24. Carry on then with the normal enumeration.

To facilitate ease of assembly it is advisable to begin at the centre Nos. 22 and 23 and work outwards.

— Proceed as follows:

— Hook the link of the key lever to the corresponding sub lever.

— Place the sub lever in the corresponding guide slot of the key lever comb P3 A 5.

— Pivot the first movement lever with reduced diameter fulcrum rod UA 8058/4.

c) When the assembly of the fortythree sub levers is completed, insert the fulcrum rod P3 B 33, at the same time slipping out the UA 8058/4 temporarily employed.

P3	A	5	Key lever comb
P3	B	22	Key lever links (1)
P3	B	23/1÷43	Sub levers (1)
P3	B	33	Fulcrum rod for sub levers

3 - FIGURE 8

Assembling the space bar connecting bracket.

Figure 8 shows a section of the space bar P3 GH 102 in the same position as that shown in figure 7.

a) Place the bracket P3 H 3 with its screws 1203014 in position on the left arm of the space bar P3 GH 102. Make sure that:

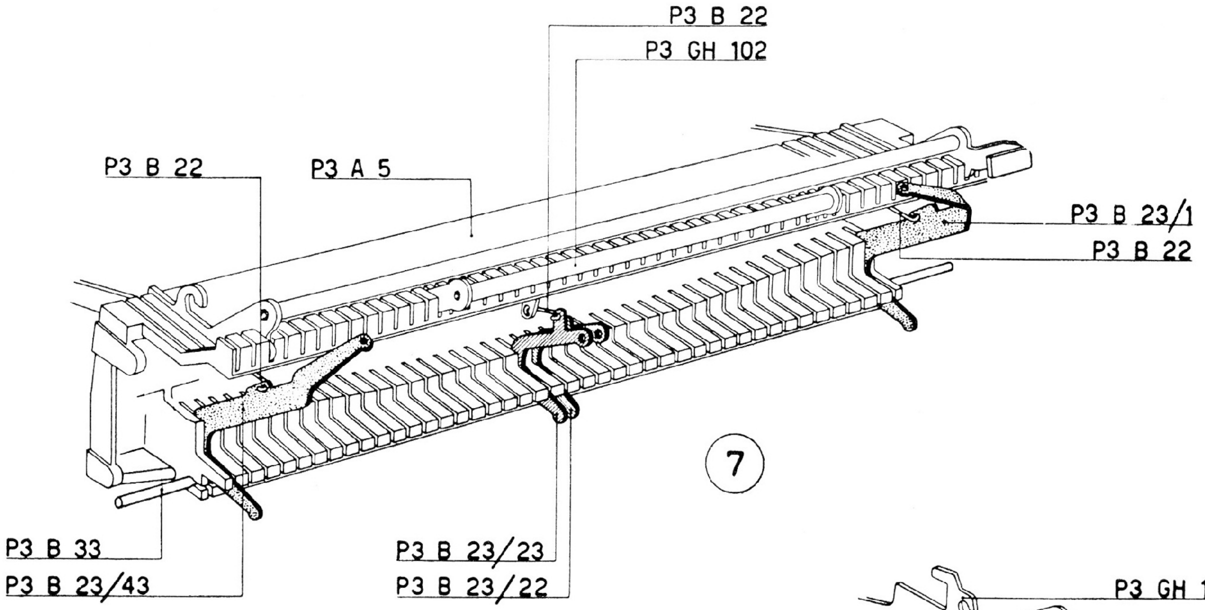
— Pin **P** of the P3 H 3 is lodged in the hole **F** of P3 GH 102.

— Screws 1203014 are in contact with the bottom of the slot of the P3 GH 102.

b) With this condition, lock the two screws 1203014.

P3	H 3	Space bar connecting bracket
P3	GH 102	Space bar shaft assembly
120 30 14		Cheese head screw for clamping P3 H 3

(1) See schematic figure on page 61.



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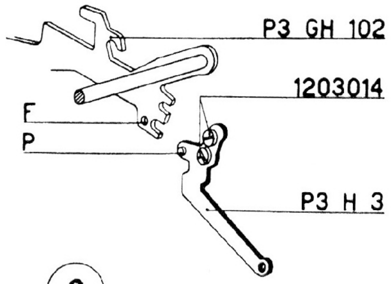


8

4 - FIGURE 9

Assembling the key lever rest pad and spring support.

a) The rest pad P3 A 10 with its shiny side upwards is placed on the comb P3 A 5.

Place the support P3 A 109 above the rest pad. The stops of the space bar frame P3 GH 102 should be in the position shown in the figure.

Secure P3 A 10 and P3 A 109 with three screws 120307.

b) Hook fortysix springs 61407-P between:

— the margin release key lever P3 Q 104
— the fortythree key levers P3 B 101÷121
— the right arm of the shift lever frame P3 GG 103
— the back spacer key lever P3 N 101

and the hooks **G** of the spring support P3 A 109.

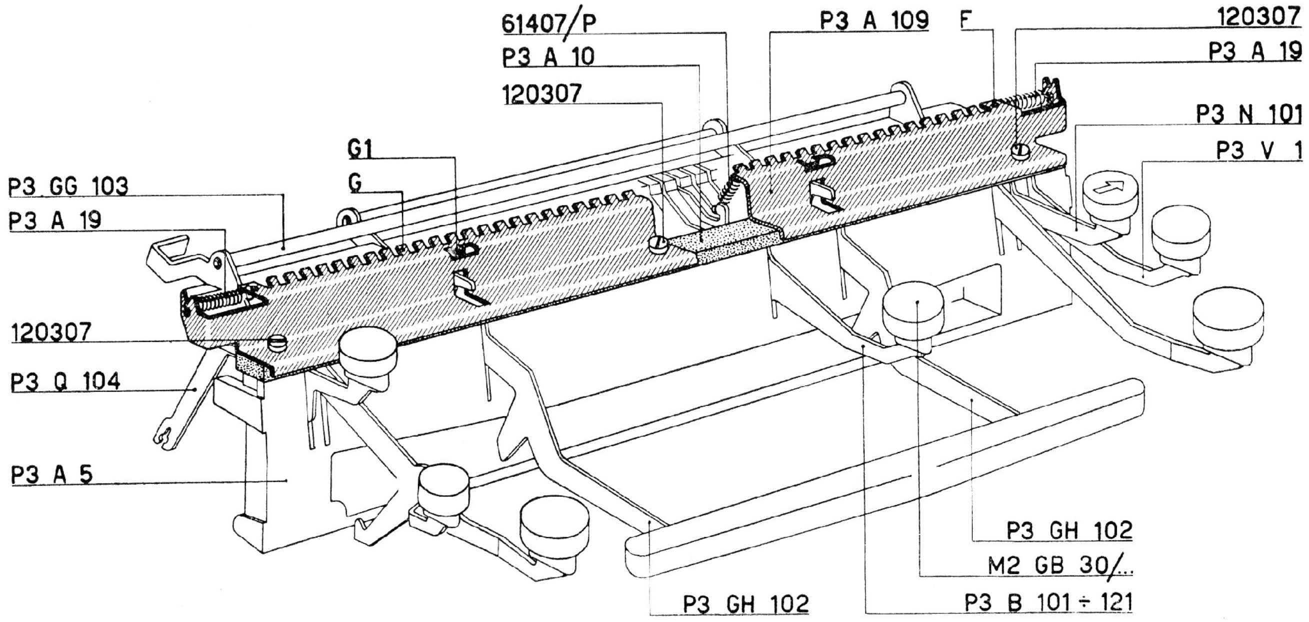
c) Hook one spring 61401-P between the tabulator kay lever P3 V 1 and the hole **F** of the spring holder P3 A 109.

d) Hook two springs 61407-P between the arms of the space bar P3 GH 102 and the hooks G_1 of the spring holder P3 A 109.

e) Hook the two top cover retaining springs P3 A 19 at the ends of the spring holder P3 A 109.

P3 A 5	Key lever comb
P3 A 10	Key lever rest pad
P3 A 19	Top cover retaining spring
P3 A 109	Key lever rest pad
P3 B 101÷121	Key levers (1)
P3 GG 103	Shift lever frame
P3 GH 102	Spacer bar assembly
P3 N 101	Back spacer key lever
P3 Q 104	Margin release kay lever
P3 V 1	Tabulator key lever
M2 GB 30/...	Keytops for key levers P3-B 101-121
120 30 7	Cheese head screw for clamping P3-A 10 and P3 A 109.
61 40 1/P	Spring for P3 V 1
61 40 7/P	Spring for P3 B 101÷121, P3 N 101, P3 Q 104, P3 GG 103.

(1) See figures 2 - 3 - 4 - 5.



9

5 - FIGURE 10

Assembling the ribbon colour change lever.

Secure the ribbon colour change lever P3 EL 59 on the key lever comb P3 A 5 with two screws 1203036. (The three coloured dots M2 L 60, M2 L 61 and M2 L 62 must be glued on to the P3 EL 59 unit).

6 - FIGURE 11

Assembling the touch tuning control lever and pawl.

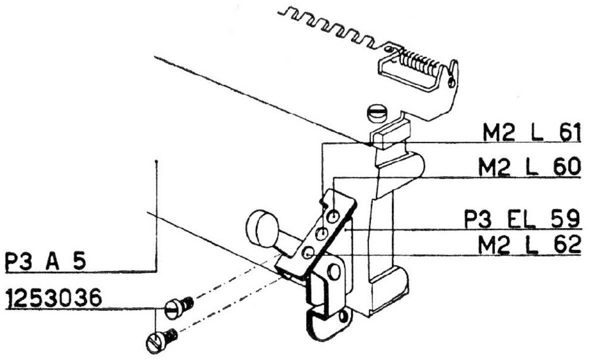
a) On the L. H. side of the frame P3 A 1, with the screws 1263033, position:

— the touch tuning control lever P3 B 30

— the touch tuning pawl P3 GB 31.

b) Screw a grub screw 129302 with its nut 138305 on the left side of the frame P3 A 1; the nut should not be screwed all the way on.

P3	A	1	L. H. frame
P3	A	5	Key lever comb
P3	B	30	Touch tuning control lever
P3	GB	31	Touch tuning pawl
P3	EL	59	Ribbon colour change lever
M2	L	60	Blue dot
M2	L	61	White dot
M2	L	62	Red dot
125	30	36	Special screw for clamping P3 EL 59
126	30	33	Shoulder screw for P3 B 30 and P3 GB 31
129	30	2	Grub screw
138	30	5	Hexagonal nut for 129 30 2



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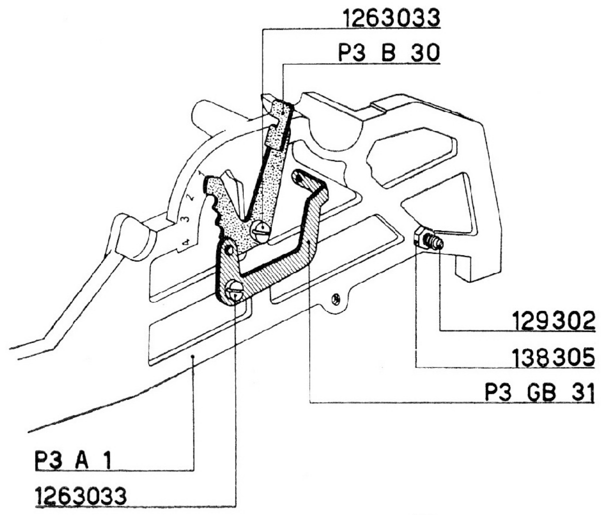

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7 - FIGURE 12

Preparing the L. H. frame.

On the inside face of the L. H. frame P3 A 1 assemble:

a) The adjusting screw P3 I 12 with a nut 138305, which determines the position of the L. H. ball guide plate P3 G 7.

b) The L. H. ball guide plate P3 G 7 with:
— the upper shift stop P3 G 12 with its nut 138305 which should not be screwed completely down;
— the lower shift stop P3 G 11.

c) Fit the two adjusting screws P3 I 12 with their nuts 138305.

They determine the position of the carriage; they should not be screwed completely down. One screw can be seen in the figure; the second should be screwed in the threaded hole **A**.

d) The front foot UA 8172/1.

e) The support UA 8173/1 with the foot UA 8172/2 in position.

8 - FIGURE 12.

Preparing the R. H. frame.

On the inside face of the L. H. frame P3 A 2 assemble:

a) The adjusting screw P3 I 12 with its nut 138305 which determines the position of the R. H. ballguide plate P3 G 8.

b) The R. H. ball guide plate P3 G 8 with:
— the upper shift stop P3 G 12 with its nut 138305 which should not be screwed completely down;
— one screw 1253036.

c) The two adjusting screws P3 I 12 with their nuts 138305.

They determine the position of the carriage; they should not be screwed completely down. They are not shown in the figure but are screwed into the threaded holes corresponding to those on the L. H. frame P3 A 1.

d) The conical support pivot 129302 with its nut 138305; the latter should not be screwed completely down.

e) The front foot UA 8172/1.

f) The support UA 8173/2 with the foot UA 8172/2 in position.

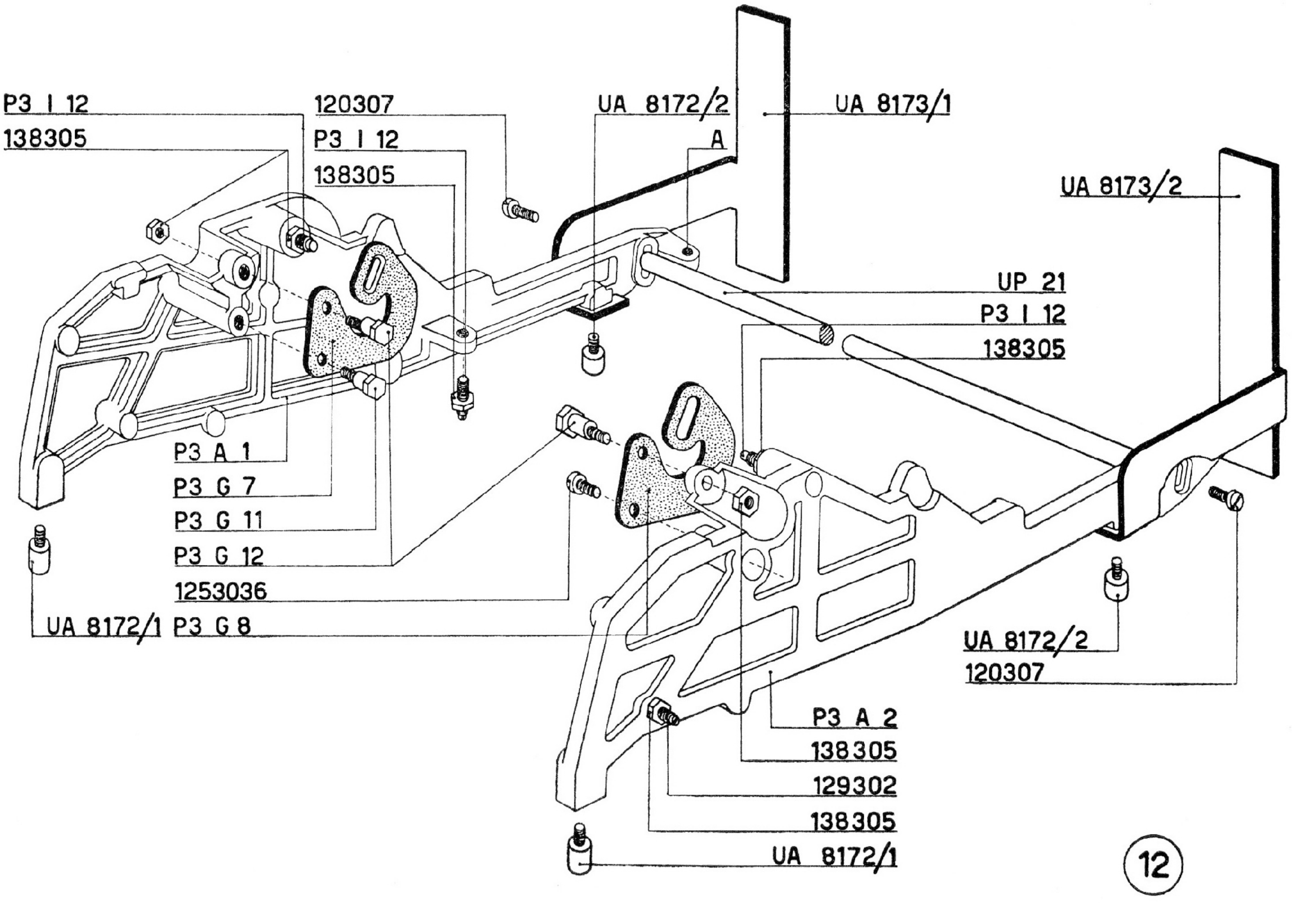
9 - FIGURE 12

Temporary connecting of the L. H. and R. H. frames.

Connect the two frames temporarily with the distance piece UP 21 and two screws 120307 which should not be screwed completely down.

P3	A	1	L. H. frame
P3	A	2	R. H. frame
P3	G	7	L. H. ball guide plate
P3	G	8	R. H. ball guide plate
P3	G	11	L. H. lower shift stop
P3	G	12	Upper shift stop

P3 I 12	Adjusting screw for P3 G 7, P3 G 8 and the carriage fixed guide
125 30 36	Special screw for P3 G 8
129 30 2	Conical support pivot
138 30 5	Hexagonal nut for P3 G 12, P3 I 12, 129302



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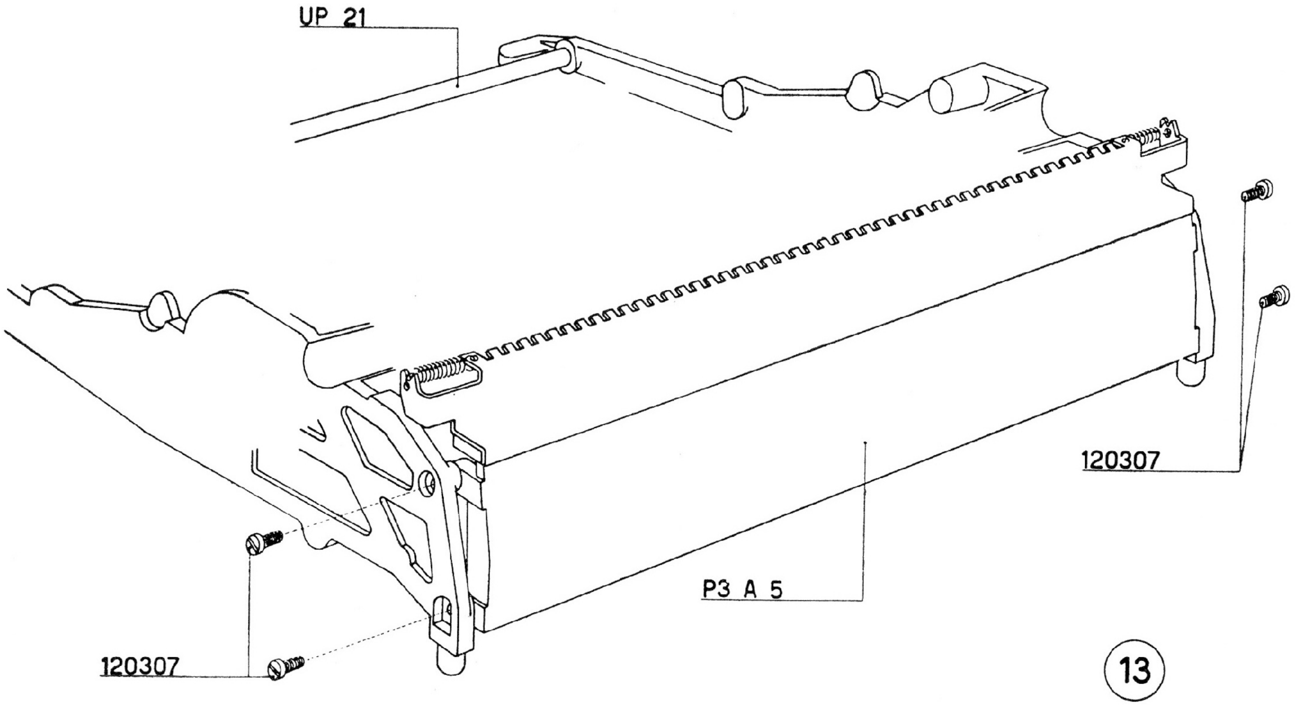
10 - FIGURE 13

Preparing the main frame

a) Secure the key lever comb P3 A 5 to the two side frames with four screws 120307.

b) Place the unit so formed on a surface plate and check that the four feet are all level. Then tighten the four screws 120307 completely and the two which secure the rear distance piece UP 21.

P3	A	5	Key levers comb
120	30	7	Cheese head screw for securing the sides of the frame to key lever comb P3 A 5.



11 - FIGURE 14

Preparation of the shift shaft.

a) Place the elastic joint release lever P3 G 24 on the L. H. **A** of the shift shaft P3 GG 6 as shown in the figure.

b) Hook the spring P3 G 10 between the left crank of the shift shaft and lever P3 G 24.

12 - FIGURE 15

Assembling the shift shaft.

Place the shift shaft P3 GG 6 prepared in the previous paragraph between the two sides of the frame as shown in the figure.

The shaft should be pivoted on its two conical supports 129302. Adjust the position of the P3 GG 6 so that the two arms **B** and **B**$_1$ are equidistant respectively from the first sub levers P3 B 23/1 and P3 B 23/43.

P3 GG 6 should be completely free to rotate and should have no axial play. When these conditions have been reached, lock the nuts 138305 of the conical supports 129302.

13 - FIGURE 15

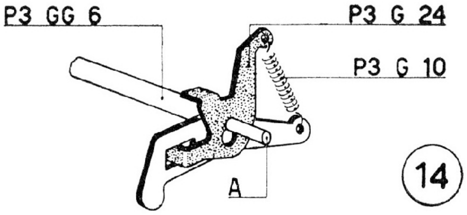
Assembling the sub lever links P3 B 24/1-4.

The schematic figure on page 61 shows the types of links to assemble and the direction on which they should be hooked on. Make sure that the first five sub lever links placed on the R. H. and the L. H., are standard while the remaining thirtythree links have milled flats.

P3	B 23/1÷43	Sub lever (1)
P3	B 24/1÷4	Sub lever link (1)
P3	G 10	Shift linkage spring

(1) See schematic figure on page 61.

P3	G 24	Elastic joint release lever
P3	GG 6	Shift shaft assembly
129 30 2		Conical support pivot
138 30 5		Hexagonal nut for 129 30 2



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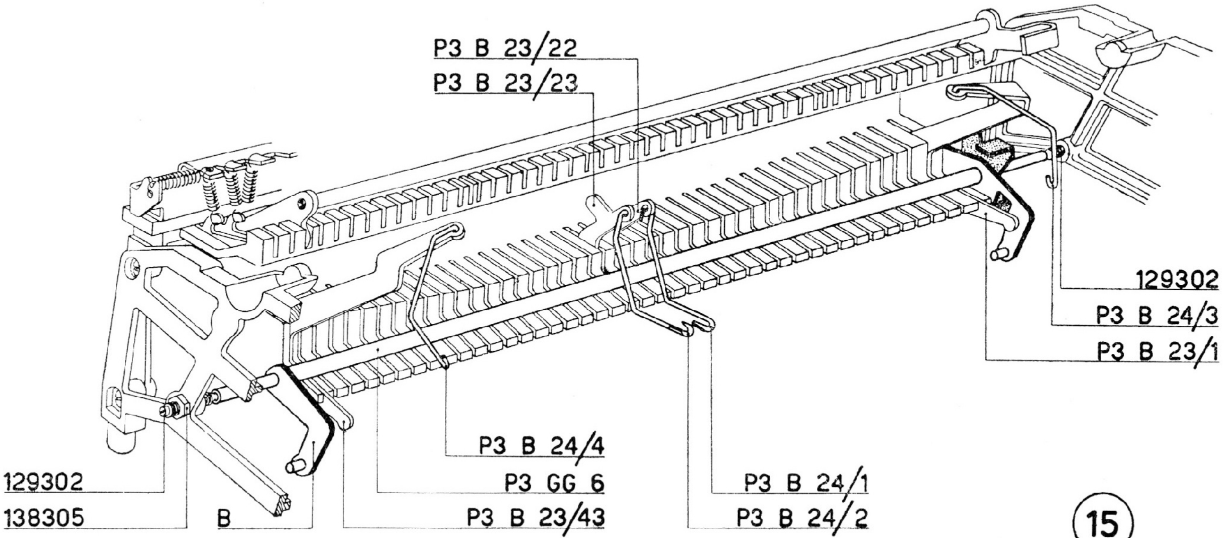

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14 - FIGURE 16

Assembling the universal bar frame on the type bar segment.

a) Space the universal bar frame P3 E 120 between the lugs **B** of the type bar segment supports P3 AE 1.

Place a washer 40312 between the arms of the universal bar frame and the lugs **B**; the convex part of the washer should be in contact with the frame. Secure the frame P3 E 120 with shoulder screw 1263042 on the right and shoulder screw 1263033 on the left.

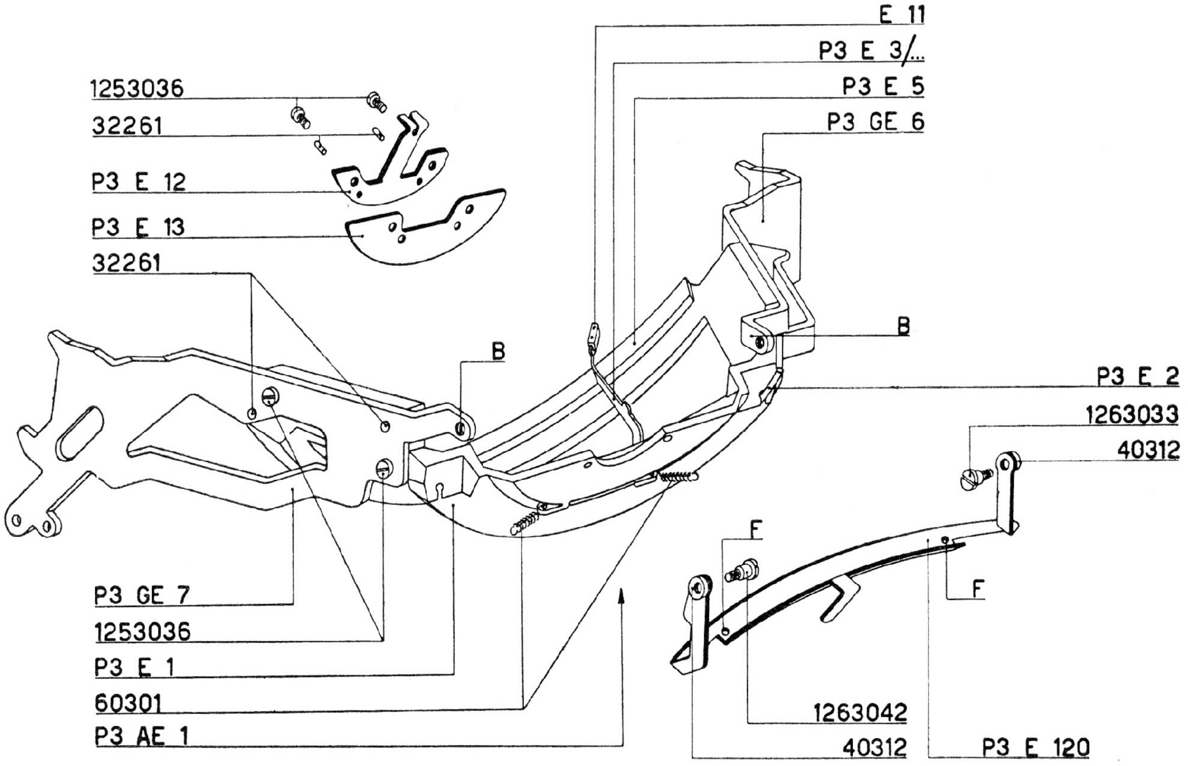
b) Check that the universal bar frame has perfect freedom of movement.

c) Hook the springs 60301 between the holes **F** of the universal bar frame and the type bar segment.

P3 E 1	Type bar segment
P3 E 2	Type bar fulcrum wire
P3 E 3/...	Type bar
P3 E 5	Type bar rest pad
P3 E 12	Type guide
P3 E 13	Type bar stop plate
P3 E 120	Universal bar frame
P3 AE 1*	Type bar segment assembly

* Specify type and keyboard.

P3 GE 6	Type bar segment L. H. support
P3 GE 7	Type bar segment L. H. support
E 11*	Type
125 30 36	Special screw
126 30 33	Shoulder screw for P3 E 120
126 30 42	Shoulder screw for P3 E 120
32 26 1	Dowel pin
40 312	Washer for 1263033 and 1263042
60 30 1	Spring for P3 E 120.



E 11
P3 E 3/...
P3 E 5
P3 GE 6
1253036
32261
P3 E 12
P3 E 13
32261
B
B
P3 E 2
1263033
40312
F
F
P3 GE 7
1253036
P3 E 1
60301
P3 AE 1
1263042
40312
P3 E 120

⑯

15 - FIGURE 17

Assembling the Type bar segment to the frame.

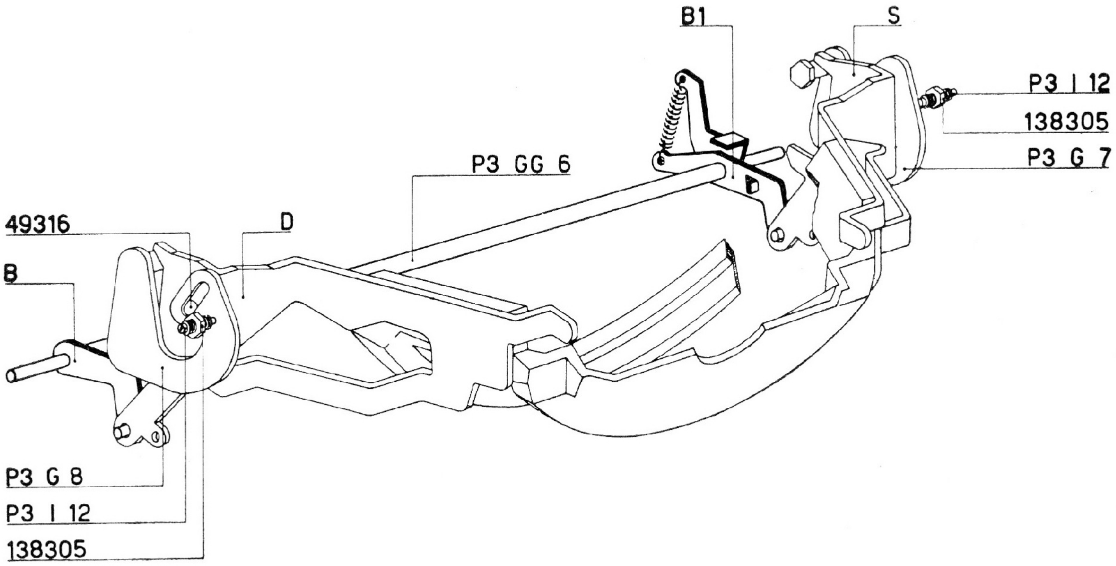
a) Temporarily move the adjusting screw P3 I 12 away from the ball guide plates P3 G 7 and P3 G 8.

b) Place the type bar segment between the slides of the frame of the machine as shown in the figure.

The side supports **S** and **D** of the segment should be lodged on the pins of arms **B** and **B1** of the shift shaft P3 GG 6.

c) Place a ball 49316 between the ball track of the guide plate P3 G 7 and P3 G 8 and the cup of the supports **S** and **D** of the type bar segment. This operation is carried out by flexing the ball guide plates P3 G 7 and P3 G 8 slightly with a screw-driver.

P3 G 7	L. H. ball guide plate
P3 G 8	R. H. ball guide plate
P3 GG 6	Shift shaft assembly
P3 I 12	Adjusting screw for P3 G 7 and P3 G 8
138 30 5	Nut for P3 I 12
49 31 6	Ball



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16 - FIGURES 18 - 19

Assembling the type bar levers and type bar links.

The type bar levers P3 B 26 are the same for all the fortythree cinematics.

The type bar links are of three types (figure 19):

— P3 B 27/1 for cinematics 1 - 2 - 42 - 43
— P3 B 27/2 for cinematics 3 - 4 - 5 - 6 - 38 - 39 - 40 - 41.
— P3 B 27/3 for cinematics 7÷37

This is all clearly shown in the schematic on page 61.

The direction for hooking the type bar links is shown in figure 18. The longer milled flat of the link P3 B 27/3 should be placed towards the type bar.

To proceed:

a) Hock the type bar lever P3 B 26 to the corresponding link P3 B 24/...

b) Hook the type bar link P3 B 27/... to the type bar and then to the type bar lever mentioned before.

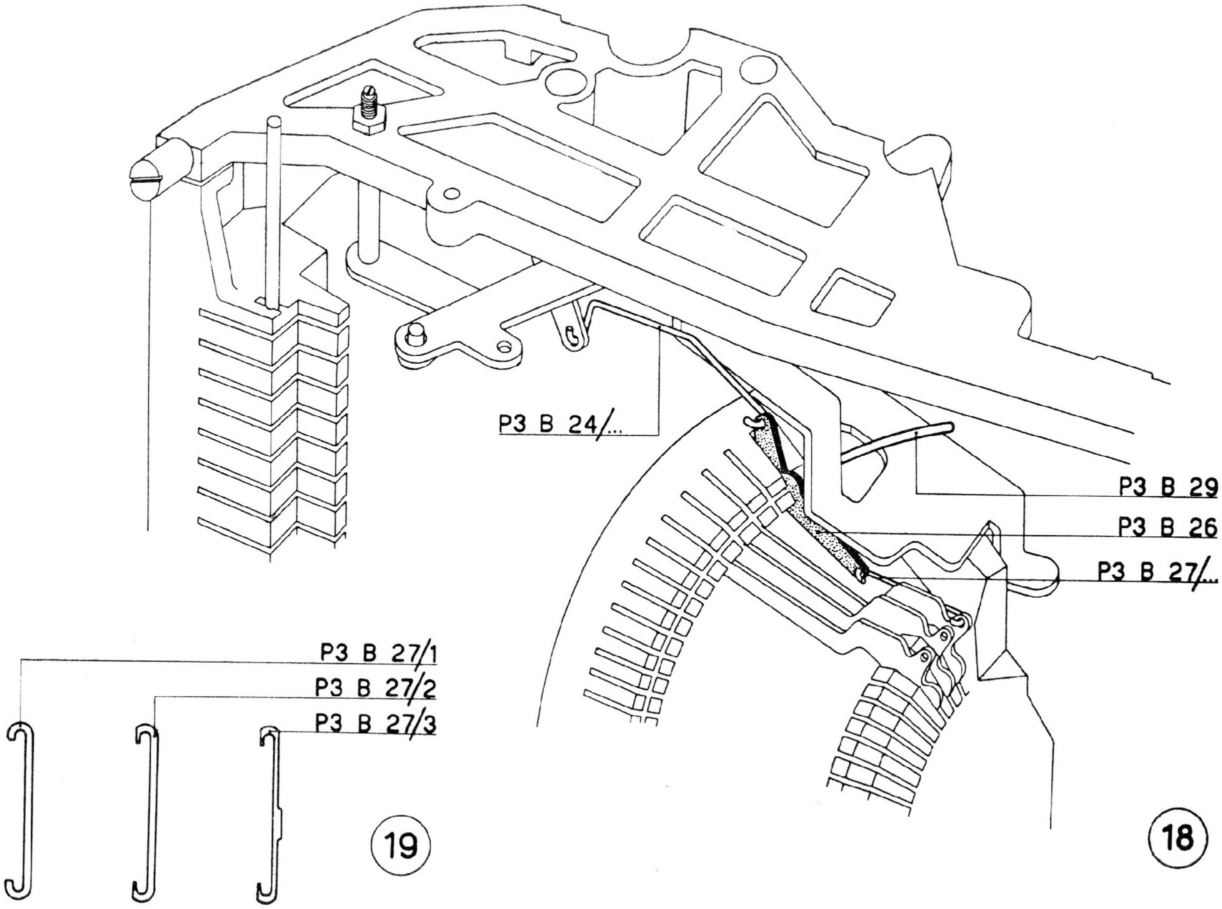
c) Place the type bar lever in the corresponding guide slot of the segment and pivot it with a reduced diameter pivot wire UA 8058/5.

When the assembling is finished, insert pivot wire P3 B 29 at the same time slipping out the preceding UA 8058/5.

P3	B	24/1÷4	Sub lever link (1)
P3	B	26	Type bar lever (1)

(1) See schematic on page 61.

P3	B	27/1÷3	Type bar link (1)
P3	B	29	Type bar lever fulcrum wire



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18

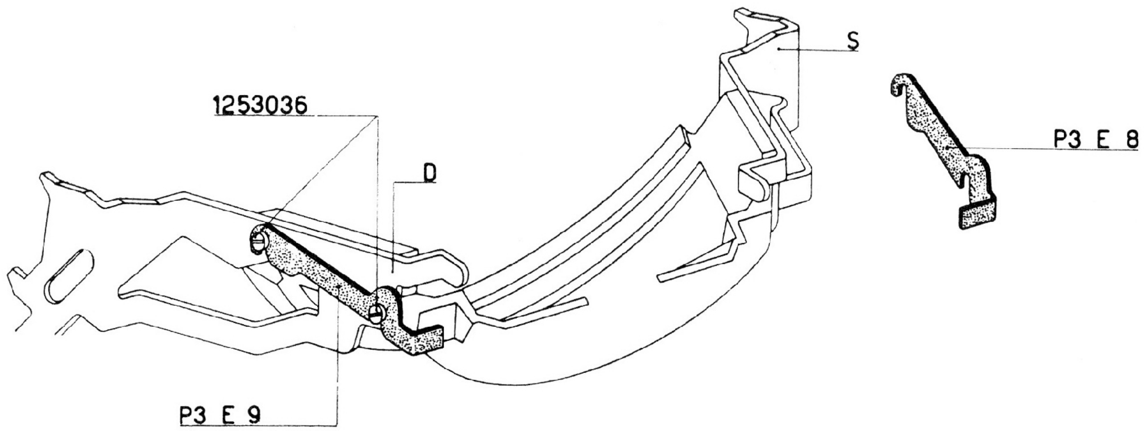
17 - FIGURE 20

Assembling the fulcrum wire locking plates.

Loosen the screws 1253036 which hold the supports **S** and **D** to the type bar segment.

Place the fulcrum wire locking plate in position as shown in the figure and clamp them with the same screws 1253036.

P3	E	8	Fulcrum wire L. H. locking plate
P3	E	9	Fulcrum wire R. H. locking plate.



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18 - FIGURE 21

Assembling the adjustable screws for the segment supports.

a) Move the adjustable screw P3 E 14 with its nut 138305 on to the R. H. guide plate P3 G 8 as shown in the figure.

Bring the head of the adjusting screw almost into contact with the R. H. support **D** of the type bar segment.

b) A second adjusting screw P3 E 14 is placed in position on the L. H. ball guide plate P3 G 7.

19 - FIGURE 21

Temporary adjustment of the lateral play of the type bar segment.

By adjusting the screws P3 E 14 and P3 I 12 reduce the lateral play of the segment to zero; the segment should be completely free to move from the capitals position to that of the small letters and viceversa.

This adjustment will be carried cut finally after the carriage has been placed in position on the frame.

20 - FIGURE 22

Adjusting the idle movement of the keys.

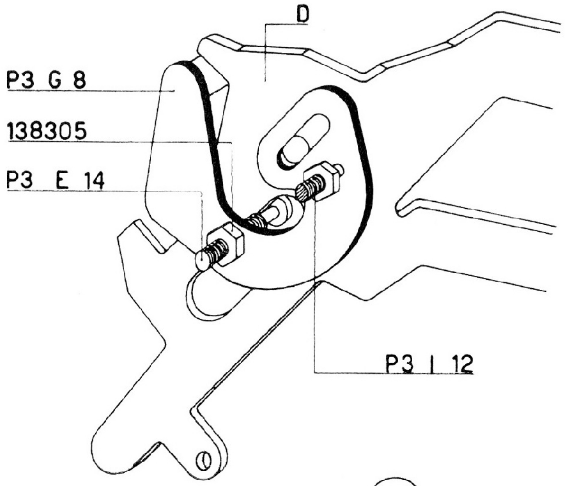
Before setting the type bars in motion, the keys must have an idle movement of .04″ (1 mm.).

This condition is obtained by adjusting the links P3 B 24/... with two jaws UA 8046/1,6×4,5.

If the idle movement is more than .04″ (1 mm.) the links must be lengthened; i. e. their angle of curvature decreased. If the idle stroke is less than .04″ (1 mm.), the links must be shortened; i. e. their angle of curvature increased.

P3 B 24/1÷4	Sub lever links (1)
P3 E 14	Adjusting screw for P3 G 7, P3 G 8
P3 G 8	R. H. ball guide plate
P3 I 12	Adjusting screw for P3 G 7, P3 G 8
138 30 5	Hexagonal nut for P3 E 14

(1) See schematic on page 61.



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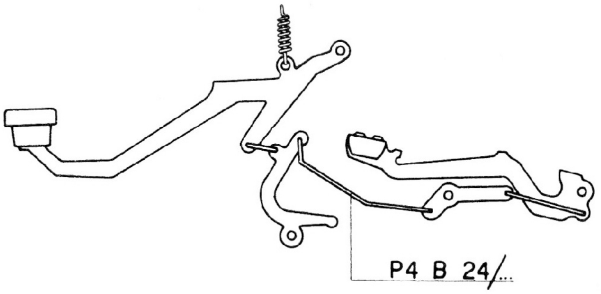

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21 - FIGURE 23

Preparing the L. H. ribbon spool support plate assembly.

a) Insert the spool shaft P3 EL 12 in the top hole in the L. H. support plate P3 EL 15; then place in position on the shaft:

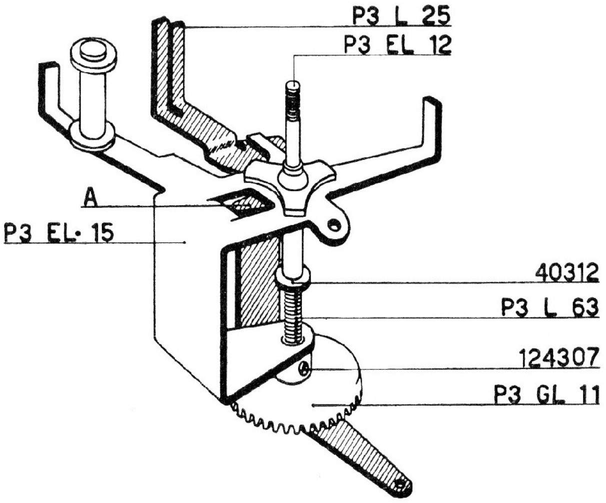
— the L. H. ribbon reverse arm P3 L 25. The tongue **A** should be positioned in the guide of the support;
— the washer 40312;
— the spring P3 L 63 for braking of the spool;
— the bottom hole of the P3 EL 15;
— the ribbon drive gear P3 GL 11 with its screw 124307;
— the bottom arm of the P3 L 25.

b) Adjust the height of the drive gear P3 GL 11 so that the shaft P3 EL 12 has .024″ (0,6 mm) axial play. When this condition is reached, lock the screw 124307.

c) The actual play of the arm P3 L 25 should be a minimum and its rotation perfectly free.

This condition is reached by adjusting the semi-sheared lug of the support P3 EL 15 on which the tongue **A** of the reverse arm rests, as required.

P3 L 19	Ribbon spool nut
P3 L 25	L. H. ribbon reverse arm
P3 L 63	Spool brake spring
P3 GL 11	Ribbon drive gear
P3 EL 12	Ribbon spool shaft
P3 EL 15	L. H. ribbon spool support plate



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22 - FIGURE 24

Preparing the R. H. ribbon spool support plate assembly.

a) Insert the spool shaft P3 EL 12 in the top hole of the R. H. support plate P3 EL 16; then place in position on the shaft:

— the R. H. ribbon reverse arm P3 EL 29. The tongue **A** should be positioned in the guide of the support.
— the washer 40312
— the spring P3 L 63 for braking of the spool
— the bottom arm of the P3 EL 16
— the ribbon drive gear P3 GL 11 with its screw 124307
— the bottom arm of the P3 EL 29

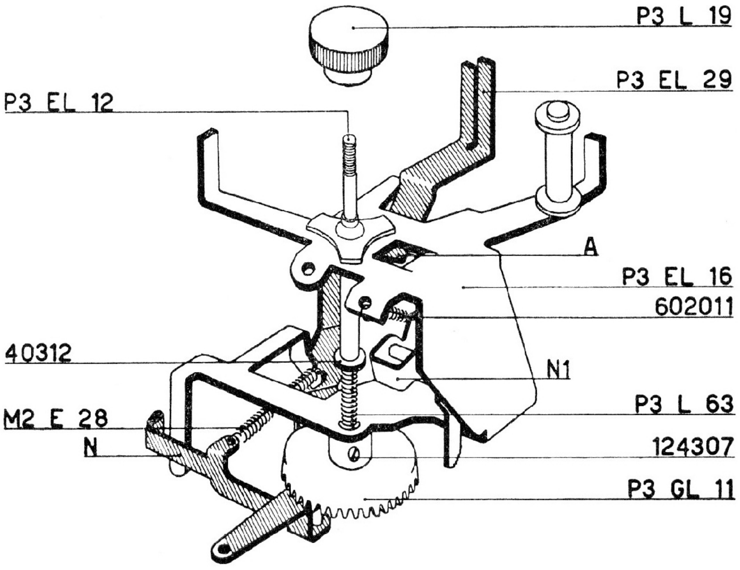
b) Adjust the height of drive gear P3 GL 11 so that the shaft P3 EL 12 has .024″ (0,6 mm.) axial play. When this condition is reached, lock the screw 124307.

c) The axial play of the lug P3 EL 29 should be a minimum and its rotation perfectly free. This condition is reached by adjusting the semi-sheared lug of support P3 El 16 on which the tongue **A** of the reverse arm rests as required.

d) Hook spring M2 E 28 between the ribbon reverse pawl **N** and the support P3 EL 16.

e) Hook the spring 602011 between the fixed pawl **N1** for ribbon advance and the support P3 EL 16.

P3 EL 16	R. H. ribbon spool support plate
P3 EL 29	R. H. ribbon reverse arm with pawl
M2 E 28	Spring for ribbon reverse pawl
124 30 7	Grub screw for clamping P3 GL 11
40 31 2	Washer for P3 EL 12
60 20 11	Spring for P3 EL 16



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23 - FIGURE 25

Assembling the ribbon spool support plates and the reverse arms connecting link.

a) Place the L. H ribbon spool support in position on the L. H. side of the frame, securing it with two screws 1253036.

The assembly should be moved upwards as high as possible and the two screws should not be completely tightened.

b) Hook one end of the connecting link P3 L 27 to the lug **B** of the L. H. ribbon spool support plate assembly.

c) Hook the other end of the link P3 L 27 to lug **B1** of the R. H. ribbon spool support plate assembly.

d) Place the R. H. assembly in position on the R. H. side of the frame, securing it with two screws 1253036. This also should be moved up as far as possible and the two screws not completely tightened down.

24 - FIGURE 25

Preparing the ribbon drive shaft.

a) On the ribbon drive shaft P3 L 8 place:

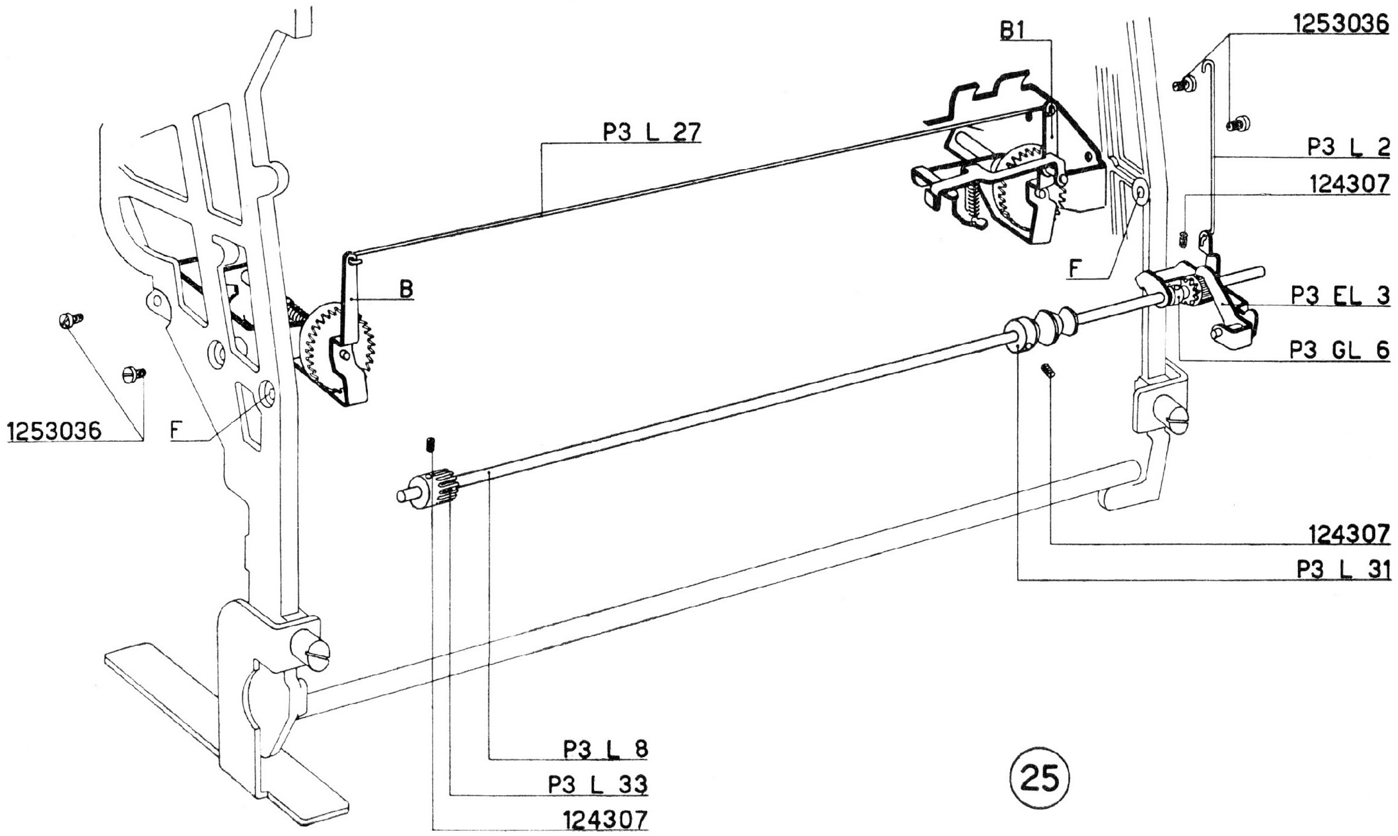
— the L. H. ribbon drive pinion P3 L 33 with its screw 124307

— the ribbon reverse collar cam P3 L 31 with its screw 124307

— the R. H. ribbon drive pinion P3 GL 6 with its screw 124307, astride of which is placed the ribbon drive with pawl P3 EL 3.

b) Hook the ribbon drive plate link P3 L 2 to the crank of the P3 EL 3.

P3 L 2	Ribbon drive plate link
P3 L 8	Ribbon drive shaft
P3 L 27	Ribbon reverse arms connecting link
P3 L 31	Ribbon reverse collar cam
P3 L 33	L. H. ribbon drive pinion
P3 EL 3	Ribbon drive with pawl
P3 GL 6	R. H. ribbon drive pinion
124 30 7	Grub screws for P3 L 31, P3 L 33 and P3 GL 6
125 30 36	Special screws for P3 EL 15 and P3 EL 16.



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25 - FIGURES 26 - 27

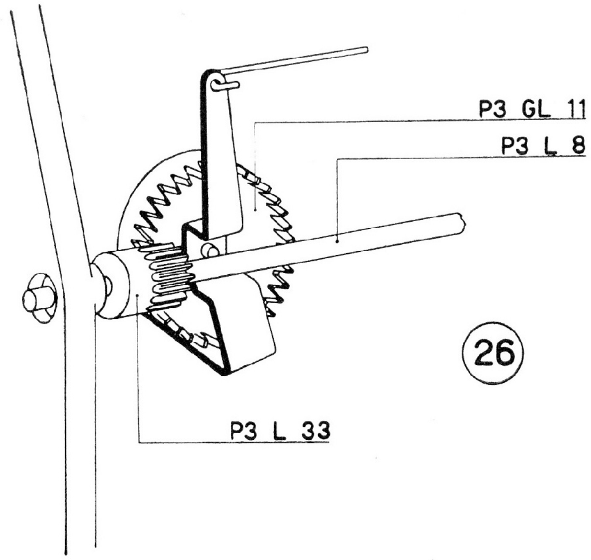
Assembling the ribbon drive shaft to the frame.

The ribbon drive shaft assembled according to the preceding paragraph is placed in the holes **F** on the two sides of the frame (see figure 25).

P3	L	8	Ribbon drive shaft
P3	L	31	Ribbon reverse collar cam
P3	L	33	L. H. ribbon drive pinion

The parts mounted on this shaft should be positioned as shown in figures 26 and 27. Ensure that the pawl **N** (on the R. H. ribbon assembly) is in the position shown in figure 27.

P3	EL	3	Ribbon drive with pawl
P3	GL	6	R. H. ribbon drive pinion
P3	GL	11	Ribbon drive gear



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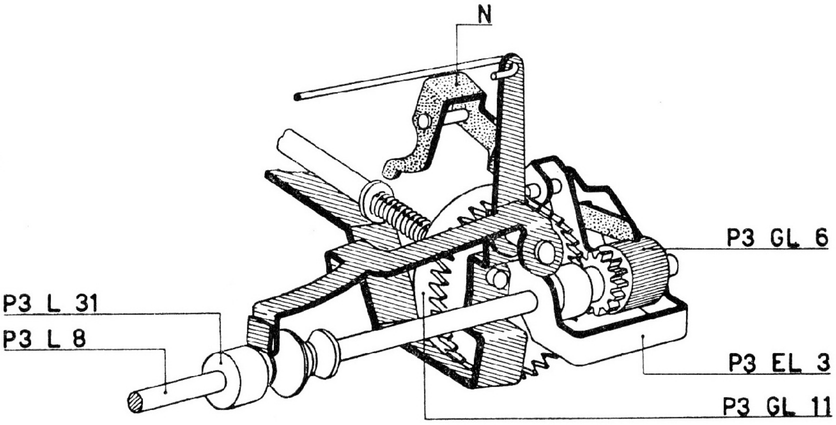


27

26 - FIGURE 28

Assembling the ribbon drive plate.

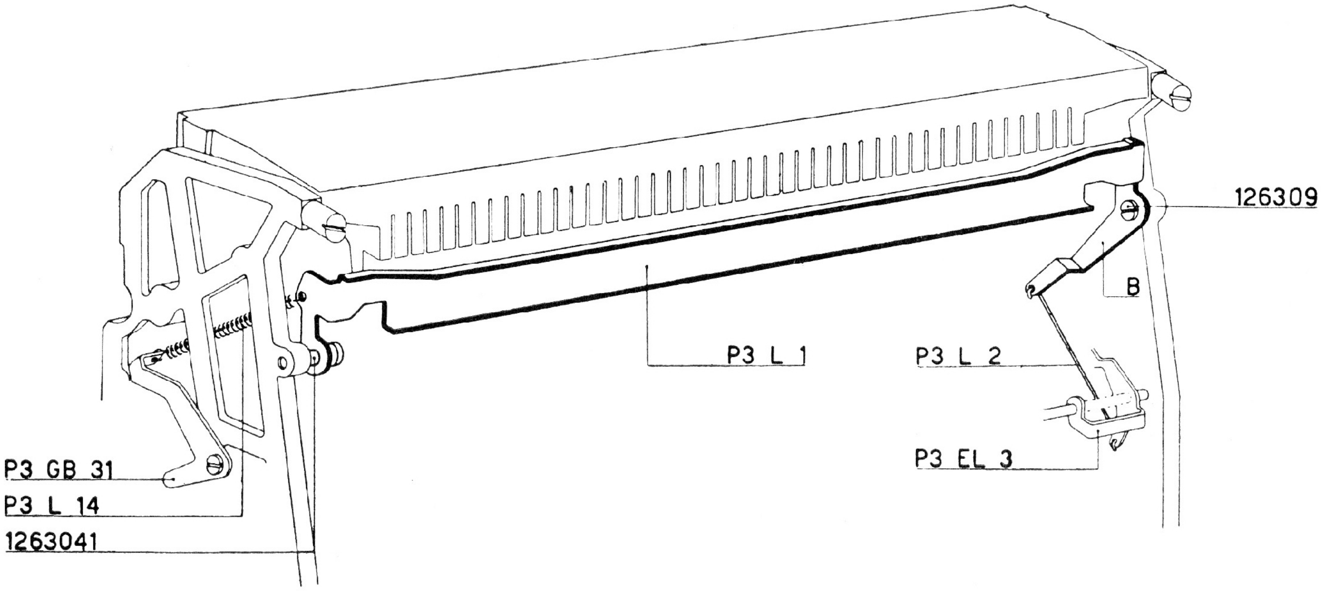
a) Hook the drive plate link P3 L 2 to the arm **B** of the ribbon drive plate P3 L 1. The other end of the link has previously been hooked to the ribbon drive with pawl P3 EL 3.

b) Secure the plate P3 L 1 to the two sides of the frame with shoulder screws 126309 and 1263041.

Check that the drive plate has perfect freedom of movement.

c) Hook the spring P3 L 14 between the ribbon drive plate P3 L 1 and the touch tuning pawl P3 GB 31.

P3 GB 31	Touch tuning pawl
P3 L 1	Ribbon drive plate
P3 L 2	Ribbon drive plate link
P3 L 14	Ribbon drive plate spring
P3 EL 3	Ribbon drive with pawl
126 30 9	Shoulder screw for P3 L 1
126 30 41	Shoulder screw for P3 L 1



(28)

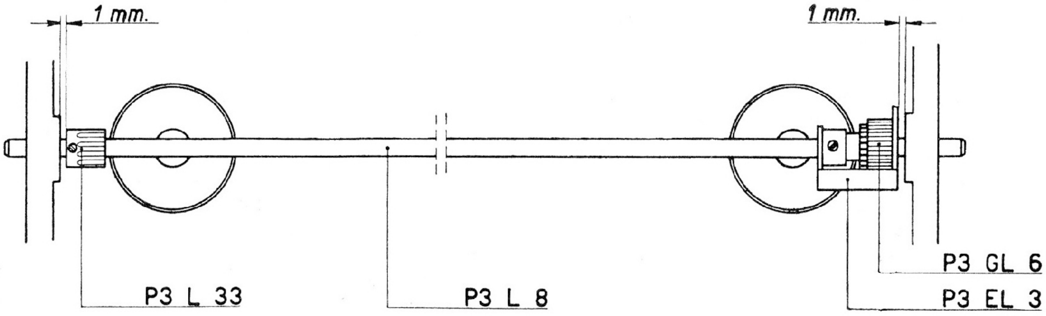
27 - FIGURES 29 - 30 - 31

Adjiusting the ribbon reverse.

a) Centre the shaft P3 L 8 in relation to the sides of the frame. With the shaft in this position set the pinion P3 L 33 and the ribbon drive with pawl P3 EL 3 at a distance of .04″ (1 mm.) from the sides (figure 29). With this condition tighten partially the screws of the pinions P3 L 33 and P3 GL 6.

b) Check the reciprocal positions of the two ribbon arms **B** and **B1**. The right arm **B** should always be against the L. H. or R. H. stop of its own support, whilst the arm **B1** should have an equal safety clearance in relation to the stops on its own support, in both positions of the arm, (figure 30). In almost every case this condition is found. If necessary adjust the angle of the bend of the upper arm of the reverse arm **B1**.

P3	L	8	Ribbon drive shaft
P3	L	33	L. H. ribbon drive pinion
P3	EL	3	Ribbon drive with pawl
P3	GL	6	R. H. ribbon drive pinion



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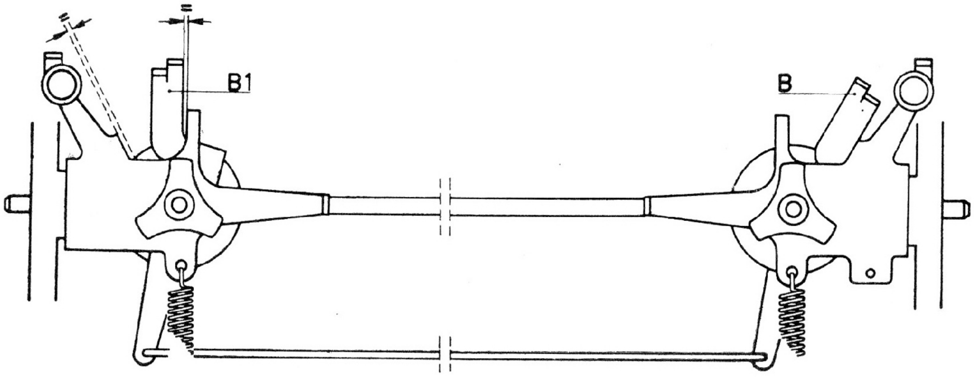


(30)

c) Move the shaft P3 L 8 to the right so that the ribbon drive with pawl P3 EL 3 is in contact with the right side of the machine (figure 31).

The L. H. pinion P3 L 33 should mesh with the corresponding ribbon drive gear and for exactly the width of the teeth of the gear. Bring the reverse arm to the position shown in figure 31. Move the cam P3 L 31 so that the pawl **P** is placed in the left groove of the cam. The following conditions should be reached:

— the pawl perfectly centred in relation to the groove

— the pawl berely touching the bottom of the groove of the cam.

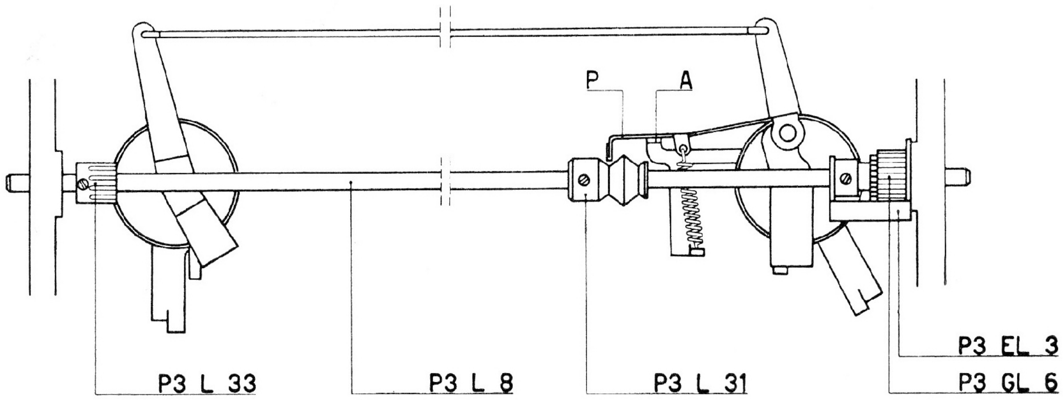
The second condition is reached by raising or lowering the stop **A** on which the position piece **P** rests.

The shaft P3 L 8 should not have any axial play.

d) Move the shaft P3 L 8 to the left and adjust the position of the arm. The conditions listed in the preceding paragraph should be obtained. To eliminate a possible axial play of the shaft P3 L 8, the pinion P3 L 33 must be moved. Lock the screws of the pinion P3 L 33 and P3 GL 6.

e) Check the meshing of the pinions and the corresponding drive gears; they should mesh for a depth equal to about half the height of their teeth. This is obtained by adjusting the height of the complete ribbon spool support plate assembly. Then tighten down the respective clamping screws.

P3	L	8	Ribbon drive shaft
P3	L	31	Ribbon reverse collar cam
P3	L	33	L.H. ribbon drive pinion
P3	EL	3	Ribbon drive with pawl
P3	GL	6	R.H. ribbon drive pinion



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28 - FIGURE 32

Preparing the carriage main spring drum.

a) Place the spring P3 O 4 in its spring drum P3 O 2. The straight end of the spring is placed on the special hook **G** in the drum.

b) Position the spindle P3 O 1 in the spring drum P3 O 2; locating the bent end of the spring P3 O 4 in the slot of the spindle P3 O 1.

c) Place the cover P3 O 3 on the drum P3 O 2. The three tongues **A** should be placed under the semi-sheared lugs **S**; the tongue **A1** should be inserted with the use of a screw-driver, in the slot **T** made in the drum P3 O 2.

29 - FIGURE 33

Preparing the carriage runway casting.

a) On the runway casting P3 P 1 assemble:

— the L.H. and centre lower rollers P3 GP 10 with their nuts 138407 and washers 40406. The nuts should be completely locked.

— the R.H. lower eccentric roller P3 GP 9 with two nuts 138407 and washer 40406. The nuts should *not* be completely locked.

— the upper centre roller P3 EP 5 with its nut 138407 and washer 40406. This nut should only be partially tightened.

— the R.H. upper eccentric screw P3 P 6 with its nut 138407 and washer 40406. This nut should only be partially tightened.

— the L.H. upper eccentric screw P3 P 6 with the margin release bar L.H. support P3 Q 6 and the nut 138407 which should only be partially tightened.

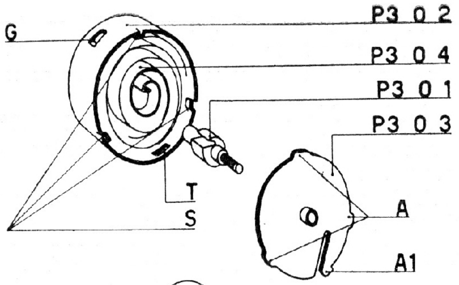
b) Fit the support screw P3 Q 35 with a nut 138305 on the support P3 Q 6.

c) Place the spring drum assembly P3 CO 2 (prepared according to the preceding paragraph) in position on the carriage casting with a nut 138305 which should be tightened completely.

d) Charge the main spring with five turns; hook the draw band P3 O 5, to the spring drum and the casting lug as shown in figure 33.

e) Secure the carriage retaining bracket P3 P 12 in position on the front of the runway casting P3 P 1 with a screw 1253036 and also the front carriage assembly P3 EP 13.

P3 O 1	Spring drum spindle
P3 O 2	Spring drum
P3 O 3	Spring drum cover
P3 O 4	Drum spring
P3 O 5	Draw band
P3 CO 2	Spring drum assembly
P3 P 1	Carriage runway casting
P3 P 6	Carriage upper eccentric screw
P3 P 12	Carriage retaining bracket
P3 EP 5	Centre carriage roller assembly
P3 GP 9	R.H. lower eccentric carriage roller assembly
P3 GP 10	L.H. centre carriage roller assembly
P3 EP 13	Front carriage roller assembly
P3 Q 6	Margin release bar L.H. support
P3 Q 35	Margin release bar support screw
125 30 36	Special screw for P3 P 12
138 30 5	Hexagonal nut for P3 CO 2
138 40 7	Hexagonal nut for P3 P 6, P3 EP 5, P3 GP 9, P3 GP 10
40 40 6	Washer for P3 P 6, P3 EP 5, P3 GP 9, P3 GP 10



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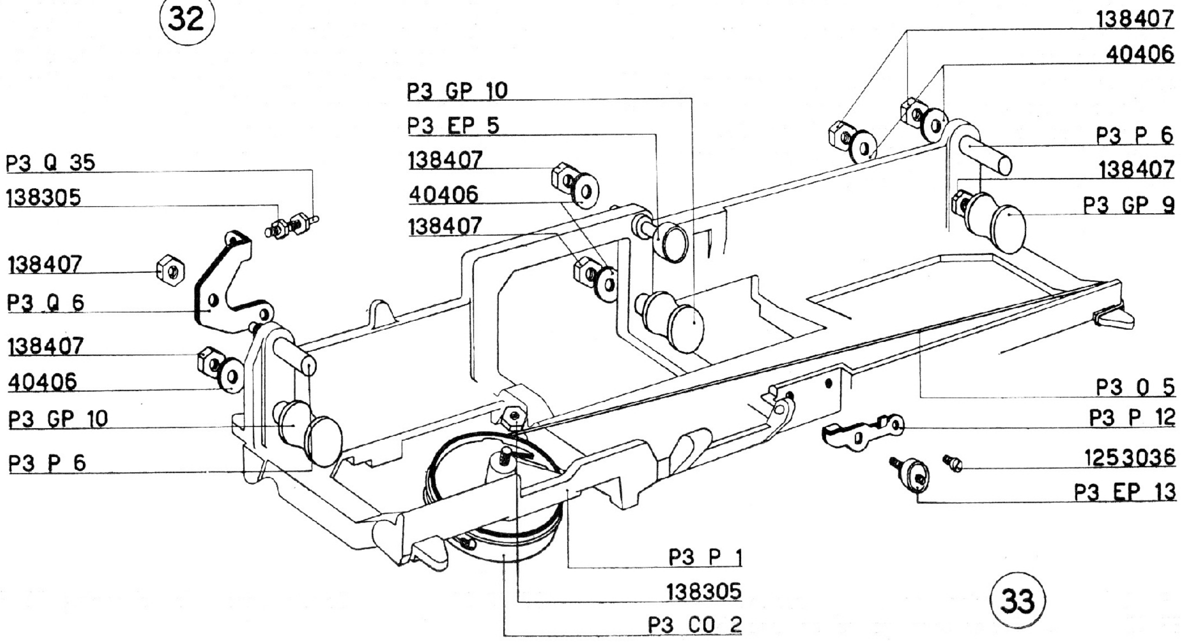

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30 - FIGURES 34 - 35 - 36

Coupling the slide carriage with the runway casting.

The tabulator tube of the slide carriage is guided by three lower rollers, by two parallel pins above and by a central upper roller (figure 34).

— The L. H. and centre lower rollers **R** are fixed.

— The R.H. lower roller **R2** is eccentric and may also be adjusted backwards or forwards.

— The two upper parallel pins **R1** and the roller **C**, are eccentric.

a) Place the runway casting temporarily in position on the sides of the machine and check that it rests on the four adjusting screws.

Secure the runway casting with four screws 120307.

b) Couple the slide carriage to the runway casting.

c) Then position it as shown in figure 35.

The pin **R1** and the roller **C** should be adjusted until they barely contact the tabulator tube.

d) Adjust the position of the roller **R2** so that it is centred in relation to the tabulator tube. When this condition has been reached, raise the roller so as to bring it barely into contact with the tube.

e) Adjust the two pins **R1** until they are .002″ (0,05 mm.) from the tabulator tube; then lower the roller **C** until it just touches the tube.

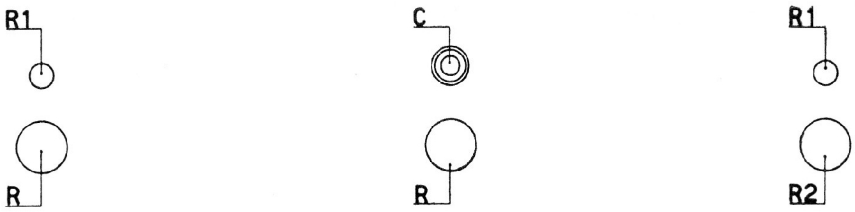
f) Check the movement of the slide carriage; it should be smooth and quiet, with no knocks.

g) Adjustment of the position of the carriage retaining bracket P3 P 12 (figure 36). Place a .002″ (0,05 mm.) feeler between the roller P3 EP 13 and the under surface of the front guide rail **G**. Bring the tongue **A** of the bracket P3 P 12 into contact with the upper surface of the rail. Tighten the screw 1253036, the pin of the roller and its nut with a special spanner UA 8013/5x78-S.

h) Remove the slide carriage.

i) Remove the runway casting.

P3 P 12	Carriage retaining bracket	125 30 36	Special screw for clamping P3 P 12.
P3 EP 13	Front carriage roller assembly		



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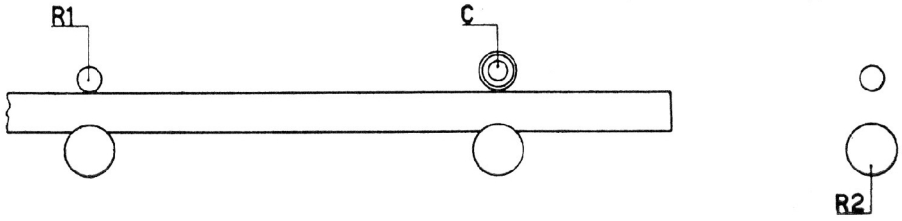

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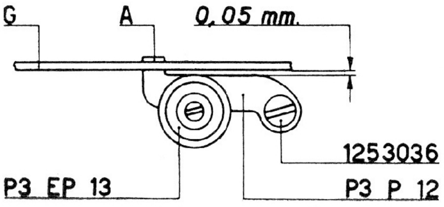

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31 - FIGURES 37 - 38

Assembling the tabulator control bridges.

Using a fulcrum wire P3 V 15 assemble on the runway casting (figure 37);
— the tabulator setting and clearing operating bracket P3 V 30
— the margin release operating elbow P3 Q 2
— the tabulator frame P3 EV 12
— the tabulator clearing bridge P3 GV 141 and the tabulator setting lever P3 V 136.

P3	P	1	Carriage runway casting
P3	Q	2	Margin release operating elbow
P3	V	15	Tabulator frame fulcrum wire
P3	V	30	Tabulator setting and clearing operating bracket

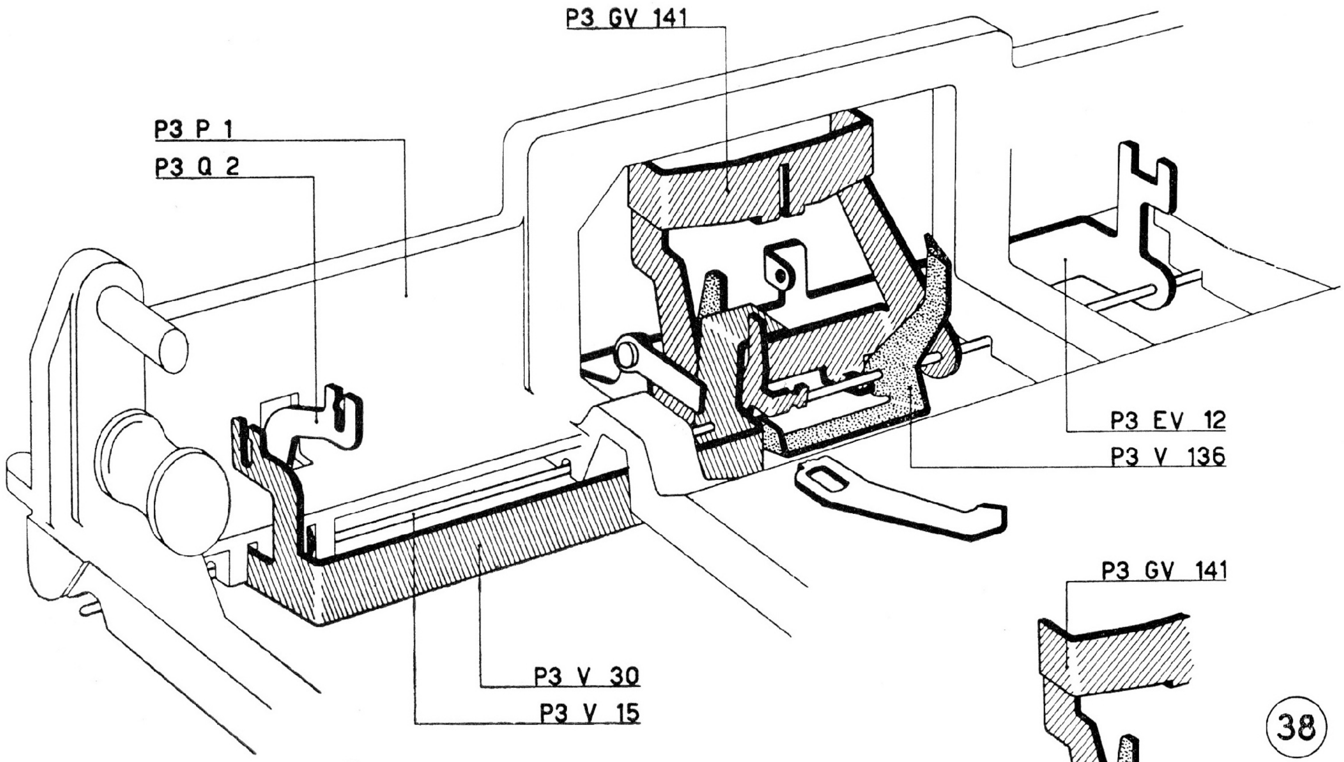
These latter parts should be positioned in relation to the frame P3 V 30, as shown in figure 37; the setting lever P3 V 136 is guided by the special slot in the clearing bridge P3 GV 141.

32 - FIGURE 38

Hooking spring 623011.

Hook the spring 623011 between the setting lever P3 V 136 and the clearing bridge P3 GV 141.

P3	V 136	Tabulator setting lever
P3	EV 12	Tabulator frame assembly
P3	GV 141	Tabulator clearing
62 30 11		Spring for spring P3 V 136 - P3 GV 141



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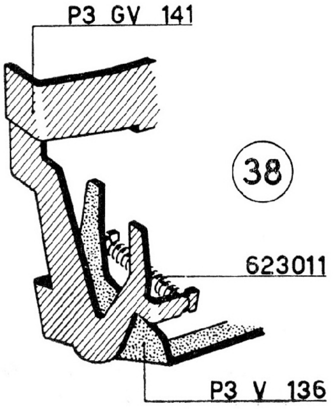

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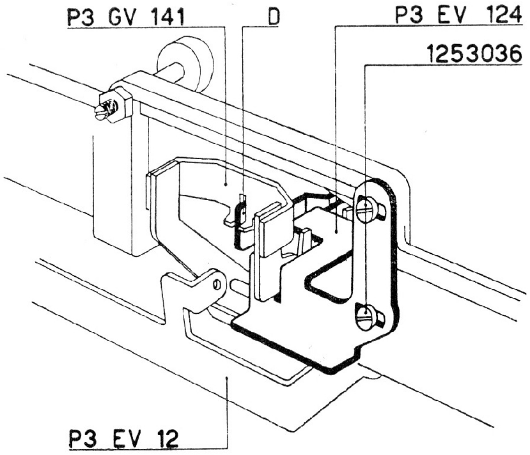
33 - FIGURES 39 - 40

Assembling the tabulator support bracket.

a) Place the bracket P3 EV 124 of the tabulator unit in position on the runway casting securing it with two screws 1253036 which should only be partially tightened (figure 39). Insert the L.H. arm of the clearing bridge P3 GV 141 into the proper seat of the P3 EV 124 (figure 39). The finger **D** of the P3 EV 124 is inserted in the slot of the clearing bridge P3 GV 141 (figures 39 - 40).

b) Hook spring 61252 between the finger **D** and the anchor point on bracket P3 EV 124 (figure 40).

P3 EV 12	Tabulator frame assembly
P3 EV 124	Tabulator support bracket with finger
P3 GV 141	Tabulator clearing
125 30 36	Special screw for P3 EV 124
61 25 2	Spring for P3 EV 124.



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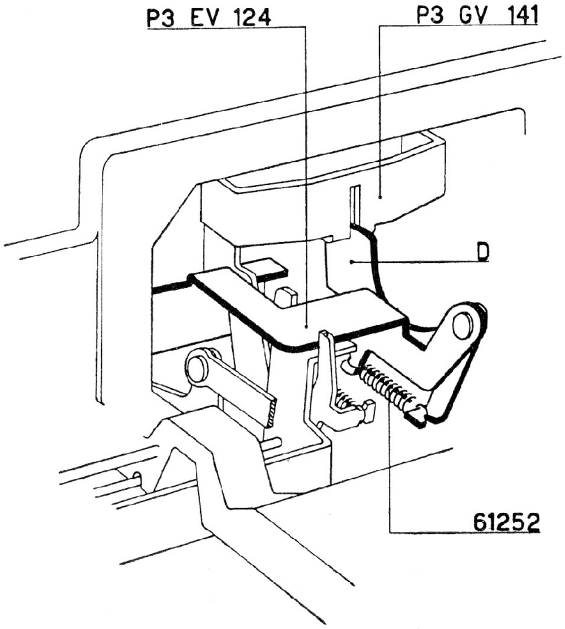


34 - FIGURE 41

Assembling the back spacing lever and tabulator operating lever.

a) Place in position on the runway casting:

— the back spacing lever P3 EN 5

— the tabulator operating lever P3 V 6, inserting the top arm in the fork of the tabulator frame P3 EV 12. The two lever sare supported by a special screw P3 N 14.

b) By means of a screw P3 N 9, secure to the runway casting:

— the lever **A** of the P3 EN 5

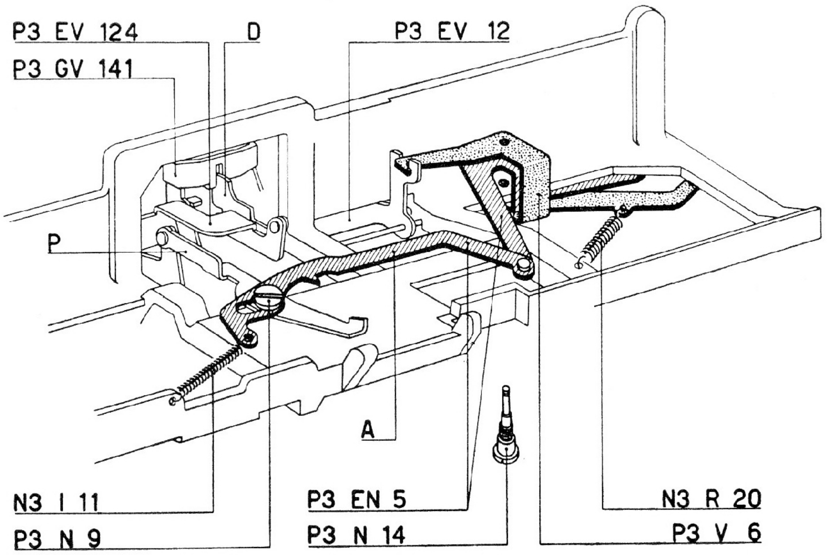
— the link **P** of the tabulator frame P3 EV 12.

c) Hook spring N3 I 11 between the lever **A** and the runway casting.

d) Hook spring N3 R 20 between the tabulator operating lever P3 V 6 and the runway casting.

P3 N 9	Back spacing lever screw
P3 N 14	Back spacer linkage and tabulator operating lever support screw
P3 EN 5	Back spacing lever
P3 V 6	Tabulator operating lever

P3 EV 12	Tabulator frame assembly
P3 EV 124	Tabulator support bracket with finger
P3 GV 141	Tabulator clearing bridge
N3 I 11	Return spring P3 EN 5
N3 R 20	Return spring P3 V 6



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35 - FIGURE 42

Assembling the tabulator frame connecting link P3 V 8.

Place the connecting link P3 V 8 in position between the tabulator frame P3 EV 12 and the finger **D** of the bracket P3 EV 124 of the tabulator unit.

First attach the link to the frame P3 EV 12; then lower the finger **D** and insert the other end of the link in the appropriate hole.

36 - FIGURE 43

Assembling the escapement wheel.

a) Screw the rocker adjusting screw P3 I 14 in the runway casting.

b) Whith the shoulder screw P3 I 3 secure on the runway casting:
— loose dog silencer spring P3 I 8
— the washer 40312 (the convex side of which should be facing upwards)
— the loose dog silencer P3 I 7
— the loose dog silencer clutch washer P3 I 18
— the escapement wheel P3 GI 6

The smallest diameters of the spring P3 I 8 wind round the washer 40312; the tongue **A** of the silencer P3 I 7 is placed in the hole **F** on the runway casting.

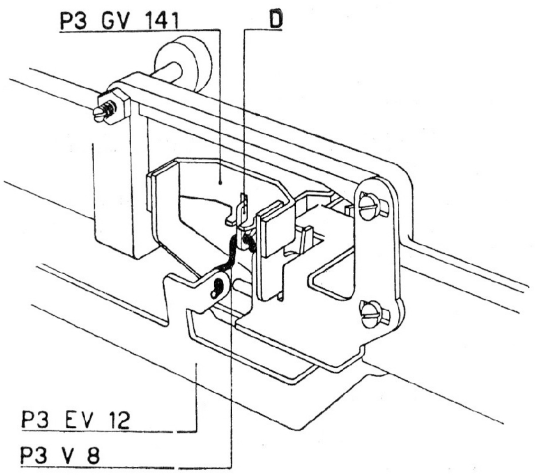
Lock the screw P3 I 3 by means of a nut 138305.

c) Check that the escapement wheel rotates freely.

P3 I 3	Escapement wheel shoulder screw
P3 I 7	Loose dog silencer
P3 I 8	Loose dog silencer spring
P3 I 14	Rocker adjusting screw
P3 I 18	Loose dog silencer clutch washer
P3 GI 6 **	Escapement wheel

** Specify spacing.

P3 V 8	Tabulator frame connecting link
P3 EV 12	Tabulator frame
P3 GV 141	Tabulator clearing bridge
138 30 5	Hexagonal nut for clamping P3 I 3
40 31 2	Washer



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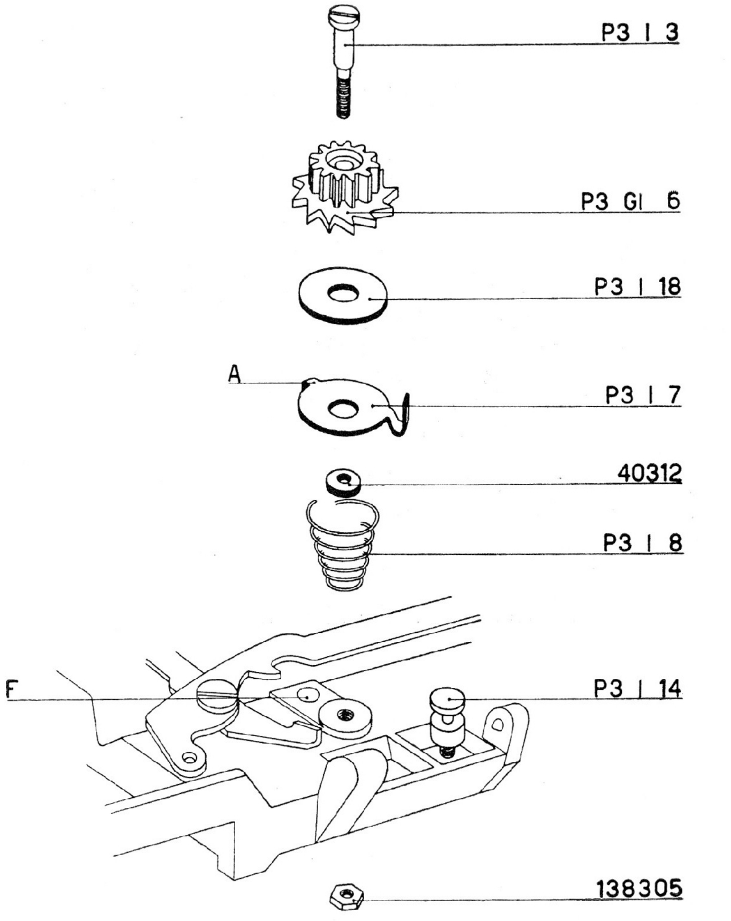

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37 - FIGURE 44

Assembling the rocker plate to the runway casting.

a) The adjusting screw P3 R 15 with its nut 138305 on to the escapement rocker plate P3 I 110.

b) The loose dog P3 GI 11 on the rocker plate P3 I 110 and hook a spring 602011 between the plate P3 I 110 and P3 GI 11, as shown in the figure.

c) Place the unit thus prepared between the fixed support pivot **R** and the adjustable support pivot 129302 on the runway casting. The rocker should rotate freely and have no axial play. When this condition has been reached lock the nut 138305 of the support pivot.

N.B. — As can be seen from the figure, the rocker plate should be inserted in the slot of the adjusting screw P3 I 14.

d) Hook the spring P3 I 16 between the tongue **A** of the rocker plate P3 I 110 and the hole below in the runway casting.

e) Secure the rocker plate locking guide P3 Q 12 with a nut 138305 on the shaft of the rocker adjusting screw P3 I 14. The fork of the P3 Q 12 should be positioned on the lower web of the runway casting as shown by the dotted lines in figure 44.

38 - FIGURE 45

Adjusting the rocker plate.

Adjust the height of the screw P3 **I 14** until the following conditions are obtained:

— clearance of .008″ (0,2 mm.) between the fixed dog **F** and the escapement wheel when the rocker plate P3 I 110 is resting on the adjusting screw P3 I 14.

With this condition lock the nut 138305 for the rocker adjusting screw.

39 - FIGURE 46

Adjustment of the silent return.

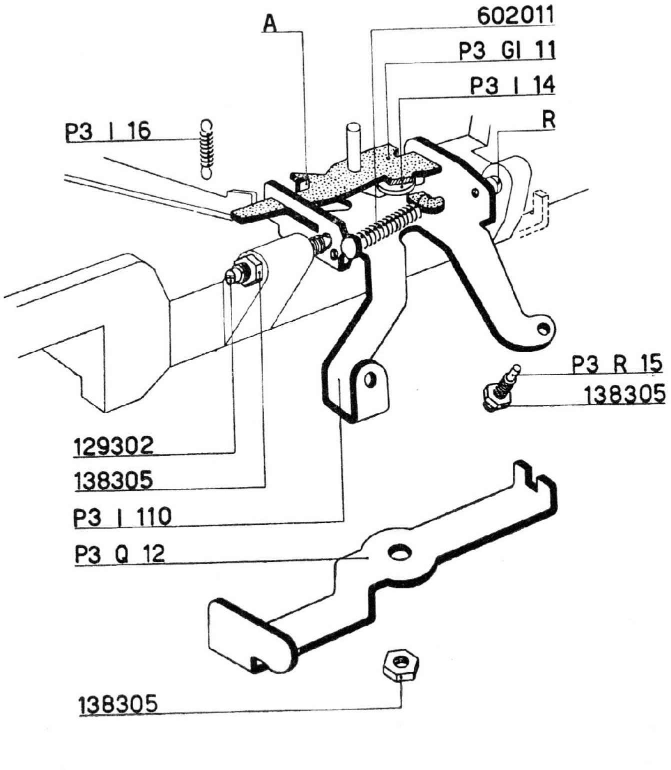
Rotate the escapement wheel in the direction shown by the arrow. The silent return tongue **A** should push out of engagement the loose dog sufficient to give a minimum clearance **L** as shown in figure.

If necessary adjust the tongue **A** of the loose dog silencer.

P3	I	14	Rocker adjusting screw
P3	I	16	Rocker plate spring
P3	I	110	Rocker plate
P3	GI	6 **	Escapement wheel
P3	GI	11	Loose dog of escapement

** Specify spacing.

P3 Q 12	Rocker plate locking guide
P3 R 15	Adjusting screw for P3 I 110
129 30 2	Conical support for P3 I 110
138 30 5	Hexagonal nut for 129 30 2, P3 R 15 and for clamping P3 Q 12
60 20 11	Spring for P3 I 110 - P3 GI 11.



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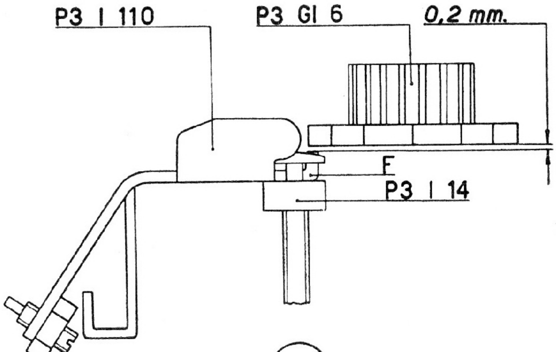

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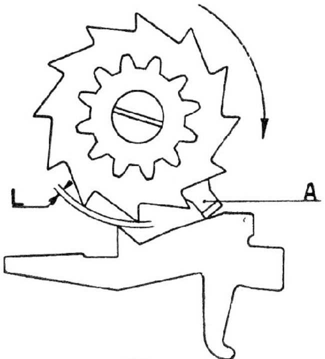

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40 - FIGURE 47

Assembling the bell and its hammer.

a) Secure the bell M2 Q 43 on the runway casting with a screw 1203014.

b) Assemble on the runway casting:

— the bell hammer P3 Q 22

— the R.H. margin release bar support P3 Q 7 with a shoulder screw 1263033 and special screw 1253036.

c) Hook spring 60301 between the hammer and the support.

d) Test the ringing of the bell; turn the bell M2 Q 43 itself or adjust the clapper P3 Q 22 if required.

e) Fit the support screw P3 Q 35 with its nut 138305 on the support P3 Q 7.

41 - FIGURES 47 - 48

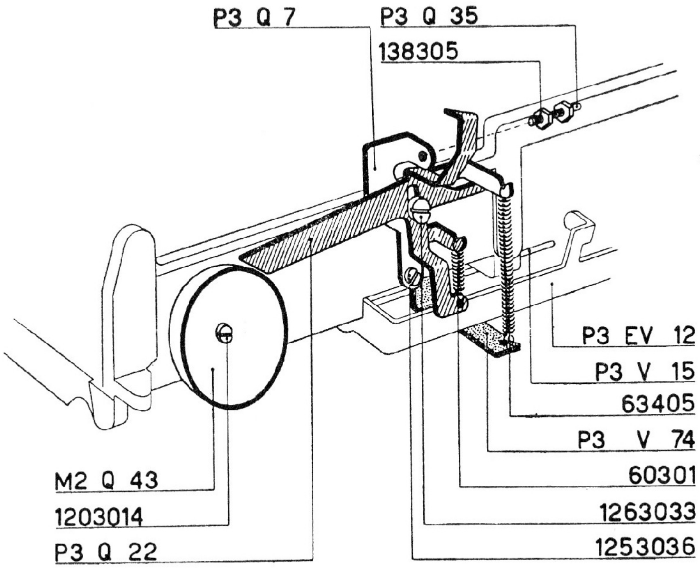
Assembling the tabulator brake.

a) Assemble the tabulator brake P3 DV 74 as shown in the figure. In order to carry out this operation, the pivot wire P3 V 15 must be partially slipped out; (i.e. towards the left).

b) Hook spring 63405 between brake P3 DV 74 and the support P3 Q 7.

P3 Q 7	R.H. margin release bar support
P3 Q 22	Bell hammer
P3 Q 35	Margin release bar support screw
P3 V 15	Tabulator frame fulcrum wire
P3 V 74	Tabulator brake
P3 V 75	Tabulator brake shoe
P3 EV 12	Tabulator frame assembly
P3 DV 74	Complete brake

M2 Q 43	Bell
120 30 14	Cheese head screw for M2 Q 43
125 30 36	Cheese head screw for P3 Q 7
126 30 33	Shoulder screw for P3 Q 7, P3 Q 22
138 30 5	Nut for P3 Q 35
60 30 1	Spring for P3 Q 22
63 40 5	Spring for P3 DV 74



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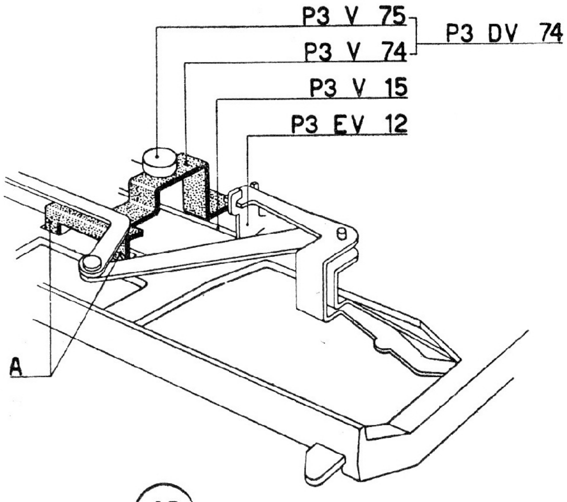

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42 - FIGURES 49 - 50

Assembling the line spacing mechanism.

a) Place the line space selector P3 EU 49 in the slot on the L.H. side of the slide carriage P3 CR 1; the cam should be placed on the bush in the side casting.

b) Insert the shaft on the line space lever support P3 GU 61 in the corresponding guide hole on the front of the L.H. side casting of the slide carriage.

c) Place the line space lever return spring P3 U 58 on the hub of the line space pawl assembly P3 EU 38; the direction should be as shown in figure 49.

Hook the line space link P3 U 34 to the assembly P3 EU 38 as shown in the figure, the other end of the link should be hooked to the crank **K** (which is part of the unit P3 GU 61).

d) Place the assembled unit in position. The crank **K** should be placed on the shaft of the support P3 GU 61; the crank P3 EU 38 is fitted on the bush where the cam of the P3 EU 49 has previously been placed. Lock the crank **K** to the shaft with the tapered pin 33161. Spring P3 U 58 should be hooked to the slot on the L.H. side of the slide carriage; then hook spring **M** of the pawl **N** as shown in figure 49.

e) Position the line space indicator P3 U 53 on the locating pin **P** on the L.H. side of the slide carriage and secure with screw P3 U 54 which should only be partially tightened.

f) Assemble the line space lever P3 U 31 on the support P3 GU 61, securing it with a shoulder screw P3 U 62 and placing washer P3 U 30 in between. The last named should be in direction shown in figure 49.

g) Place the line space detent carrier P3 EU 42 in position on the stop P3 U 41 (figure 50) with the screw 1203014 which should only be partially tightened.

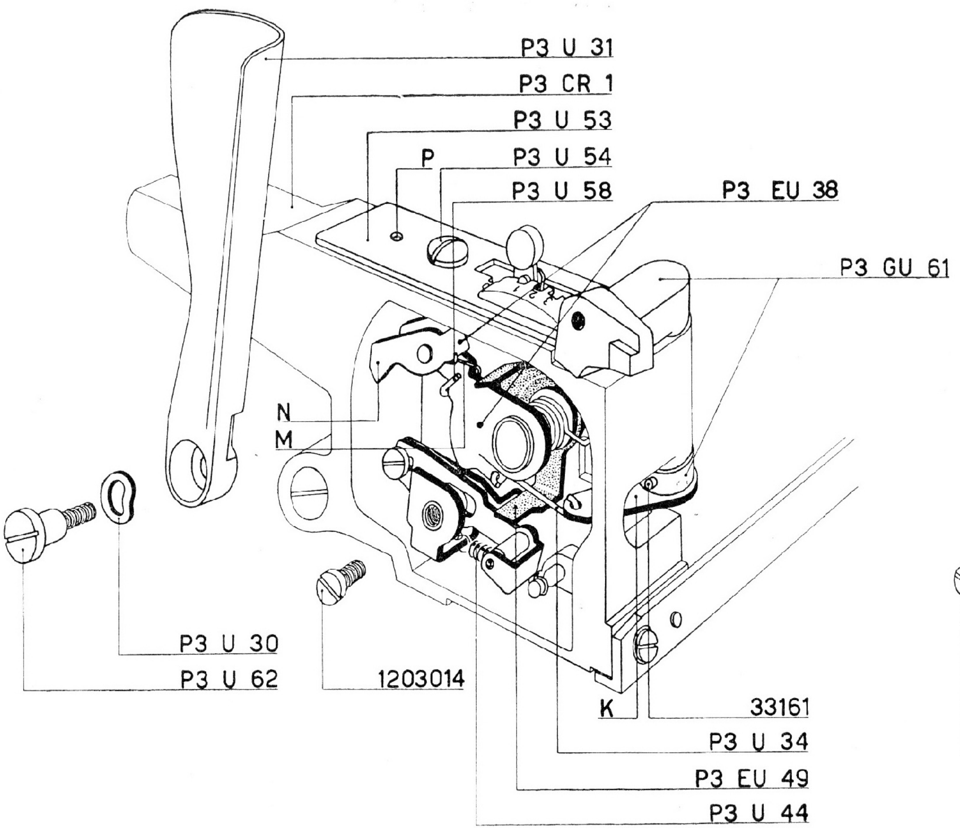
Position the unit thus prepared as shown in figure 49 and secure with a screw 120 30 14.

h) Hook the spring P3 U 44 between the P3 U 41 and the spring anchor pin fixed on the L.H. of the slide carriage.

P3	CR	1 **	Carriage slides, front rail and tabulator tune assembly
P3	U	30	Elastic washer for line space lever
P3	U	31	Line space lever
P3	U	34	Line space link
P3	U	41	Line space pawl stop
P3	U	44	Line space detent spring
P3	U	53 ***	Line space indicator

** Specify spacing.
*** Specify line spacing.

P3	U	54	Line space indicator screw
P3	U	58	Line space lever spring
P3	U	62	Line space lever screw
P3	EU	38	Line space pawl assembly
P3	EU	42	Line space detent carrier
P3	EU	49	Line space selector
P3	GU	61	Line space lever support
120	30	14	Cheese head screw for P3 EU 42 and P3 U 41
33	16	1	Taper pin for P3 GU 61



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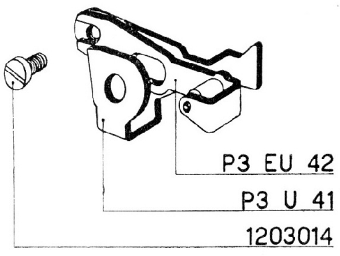

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43 - FIGURES 51 - 52

Preparing the carriage release frame.

Fit the L.H. and R.H. carriage release levers P3 S 3 and P3 S 4 on their respective ends of the carriage release frame P3 S 8. The semi-sheared pins **K** of the levers should be inserted in the slots of the frame P3 S 8.

Secure with screws 1203014 which should only be partially tightened

44 - FIGURES 51 - 52

Assembling of the support levers for the paper feed rollers.

a) Place the rear feed roll lever P3 R 8 and the front one P3 R 7 in position on the pin **P1** of the L.H. side of the slide carriage.

b) Put a second pair of levers P3 R 7 and P3 R 8 in place on the R.H. side of the slide carriage with a shoulder screw 1263042.

45 - FIGURES 51 - 52

Assembling the paper release shaft and lever.

a) Place the paper release shaft P3 GR 16 between the two inside faces of the slide carriage; it is supported on the L.H. side by the fixed pin **P2** (figure 51) and on the R.H. side by the support P3 R 15 and its nut 138305 (figure 52).

The support levers P3 R 7 and P3 R 8 should reach the position shown in the figure in relation to the pins **A** and **B** of the P3 GR 16.

b) Adjust the axial position of the support P3 R 15 so that the movement of the P3 GR 16 is slightly braked. Screw down the nut 138305 with the special spanner UA 8013/6x78-S.

c) Hook the springs P3 R 5 between the levers P3 R 7 and P3 R 8.

46 - FIGURES 51 - 52

Assembling the carriage release frame to the slide carriage.

a) Place the carriage release frame prepared according to paragraph 43 in position between the sides of the slide carriage as shown in the two figures. The two levers P3 S 3 and P3 S 4 should be pivoted on the pins **P** on the side castings.

b) Check the axial play of the frame, adjusting the two levers P3 S 3 and P3 S 4; the play should be minimum and they should have perfect freedom to rotate.

47 - FIGURES 51 - 52

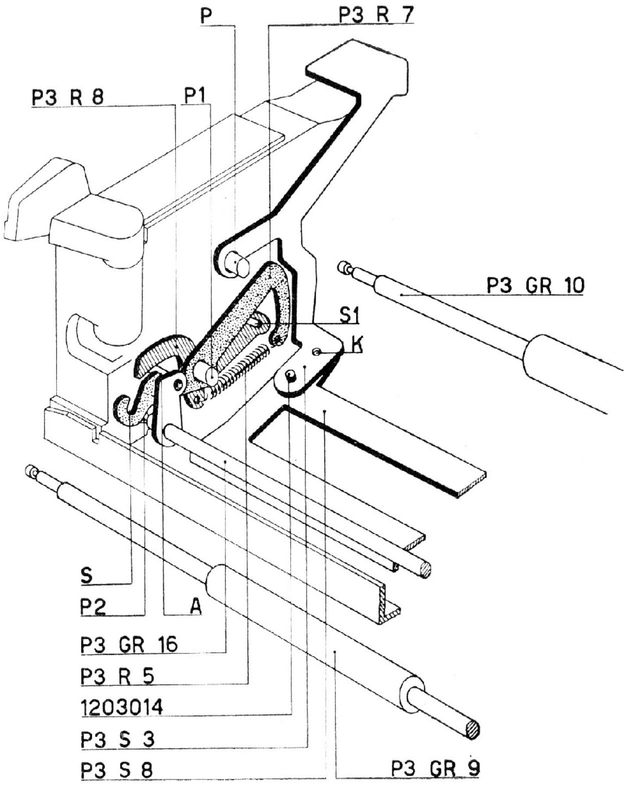
Assembling the paper front feed roller and rear feed roller shafts.

a) Place the ends of the front feed roller shaft P3 GR 9 in the seats **S** of the front feed roller levers P3 R 7.

b) Place the ends of the rear feed roller shaft P3 GR 10 in the seats **S1** of the rear feed roller levers P3 R 8.

P3	R	5	Paper release spring
P3	R	7	Front feed roller lever
P3	R	8	Rear feed roller lever
P3	R	15	R.H. paper release shaft support
P3	GR	9	Front feed roller shaft assembly
P3	GR	10	Rear feed roller shaft assembly
P3	GR	16	Paper release shaft

P3 S 3	L.H. carriage release lever
P3 S 4	R.H. carriage release lever
P3 S 8	Carriage release frame
120 30 14	Cheese head screw for clamping P3 S 8
126 30 42	Shoulder screw for P3 R 7 and P3 R 8
138 30 5	Hexagonal nut for P3 R 15



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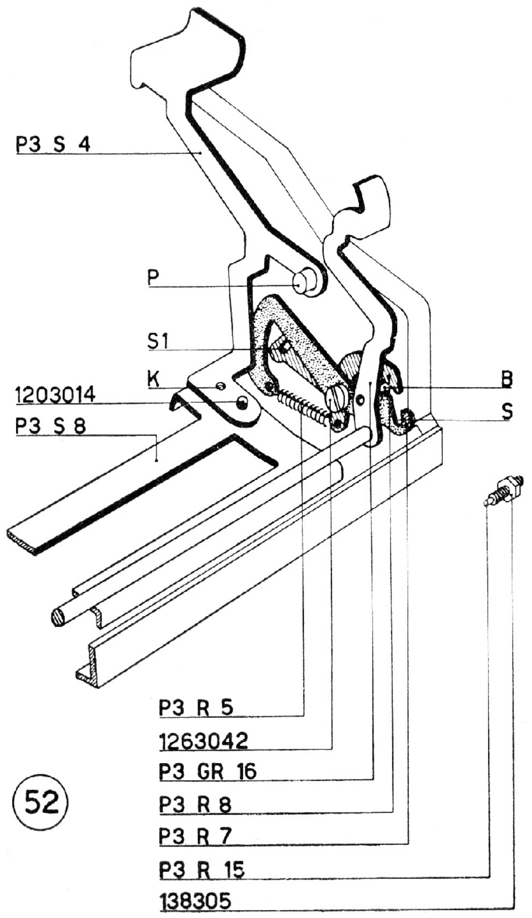

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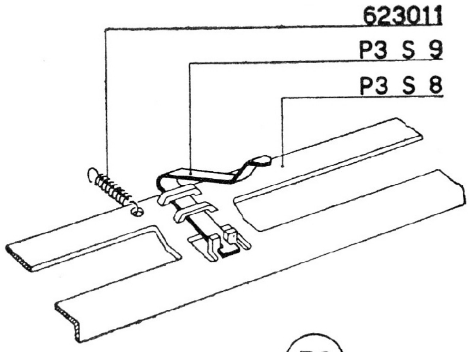
48 - FIGURE 53

Assembling the leaf spring for the carriage release frame.

a) Place the leaf spring P3 S 9 in position on the carriage release frame P3 S 8 as shown in the figure.
b) Hook spring 623011 to the frame P3 S 8.

P3 I 5 **	Carriage rack
P3 S 8	Carriage release frame

** Specify spacing.



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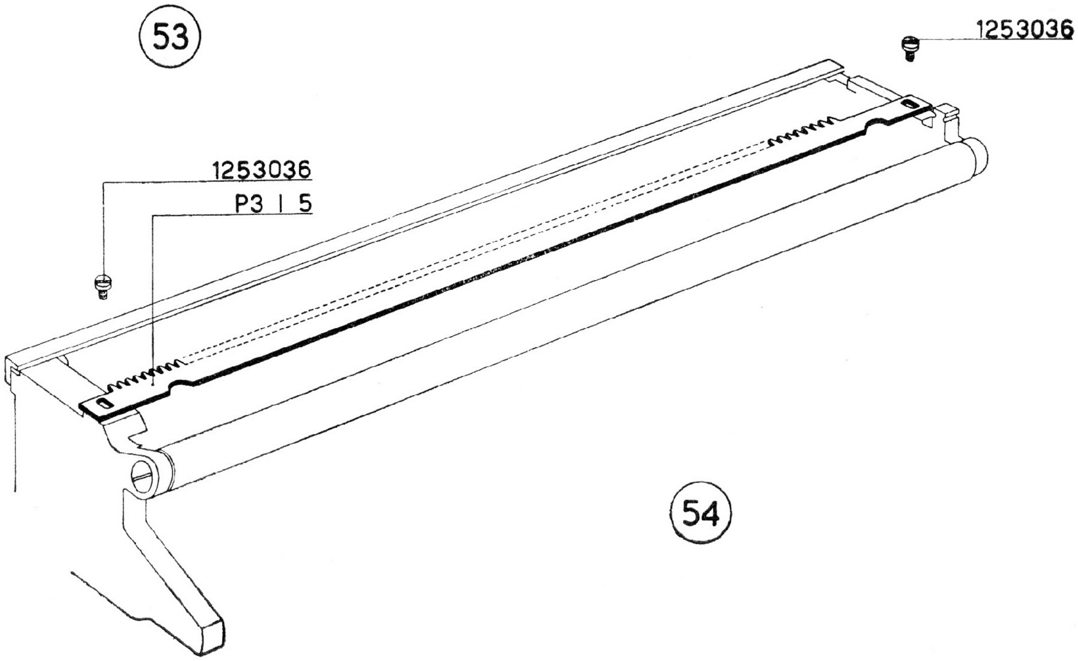
49 - FIGURE 54

Assembling the carriage rack.

Place the rack P3 I 5 in position on the two sides of the slide carriage with two screws 1253036 which should only be partially tightened.

P3 S 9	Leaf spring
125 30 36	Cheese head screw for P3 I 5
62 30 11	Spring for P3 S 8



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50 - FIGURES 55 - 57

Preparing the bail rod frame assembly.

a) Position the special ring P3 R 49 in the seat **S** of the two bail rod rollers P3 R 34 (figure 57).

b) When the two rollers are prepared, place them on the bail rod shaft P3 R 28.

c) Mount the P3 R 28 with its rollers between the arms of the bail rod frame assembly P3 GR 32. Close the ends of the two arms so that they hold the shaft steady.

51 - FIGURES 55 - 56

Preparing the paper control plate.

a) Assemble the L.H. and R.H. paper supports P3 R 25 and P3 R 26 on the paper table (complete with margin scale) P3 CR 124 with the screws 1203014.

As is clearly shown in figure 56, the special nut P3 R 27 with the small spring P3 R 33 in position, is placed in the guide hole of the paper support.

The unit thus formed is then put in position on the paper table; the nuts should be inserted in the special guide seats made under the hole where the screw 1203014 is placed.

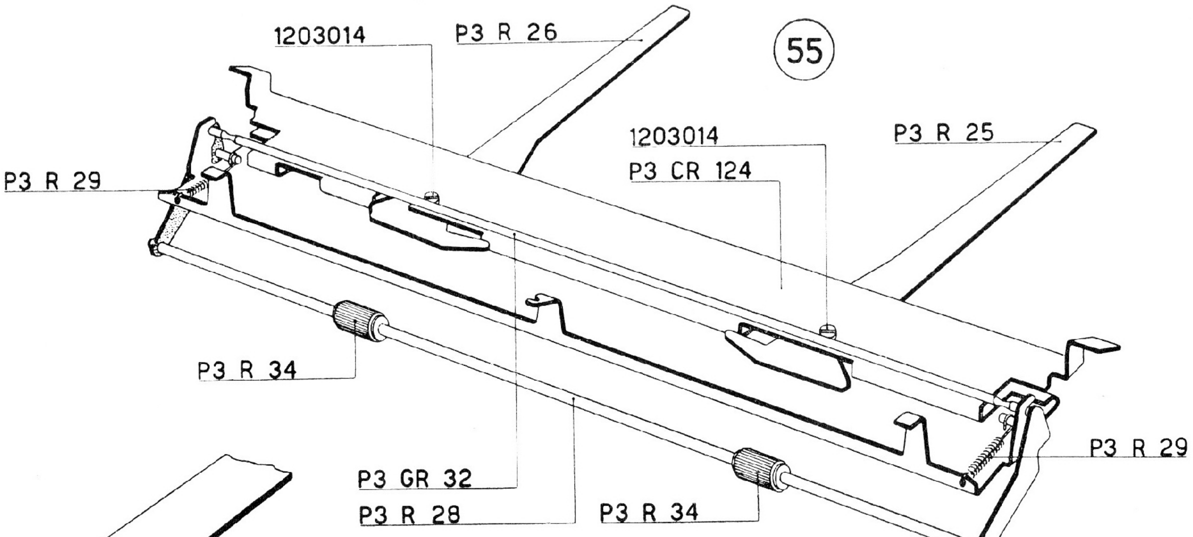
b) Place the bail rod frame assembly, prepared according to the preceding paragraph in position on the paper table. Figure 55 shows how it is assembled.

c) Hook the springs P3 R 29 between the arms of the bail rod frame and the paper table.

P3	R	25	L.H. paper support
P3	R	26	R.H. paper support
P3	R	27	Paper support special nut
P3	R	28	Bail rod shaft
P3	R	29	Bail rod shaft spring
P3	R	33	Paper support spring
P3	R	34	Bail rod roller

P3	R	49	Bail rod roller spring
P3	GR	32	Bail rod frame assembly
P3	CR	124 **	Paper control frame with graduated bar
120	30	14	Cheese head screw for P3 R 25 and P3 R 26

** Specify spacing.



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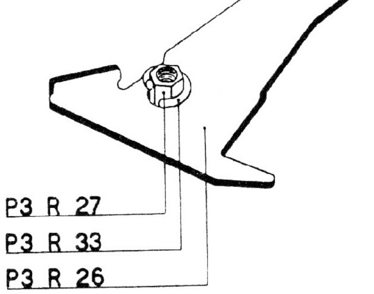

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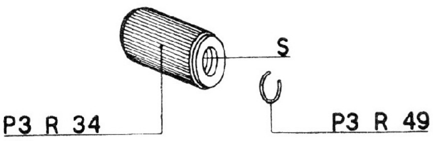

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52 - FIGURE 58

Preparing the margin rack with margin stops.

a) On the margin rack P3 T 1 assemble:
— the L.H. margin stop P3 T 2 with its leaf spring P3 T 4
— the R.H. margin stop P3 T 3 with its leaf spring P3 T 4.

b) Fit the pins 32261 in their proper holes in the margin rack.

P3	S	8	Carriage release frame
P3	T	1 **	Margin rack
P3	T	2	L.H. margin stop
P3	T	3	R.H. margin stop
P3	T	4	Margin stop leaf spring

** Specify spacing.

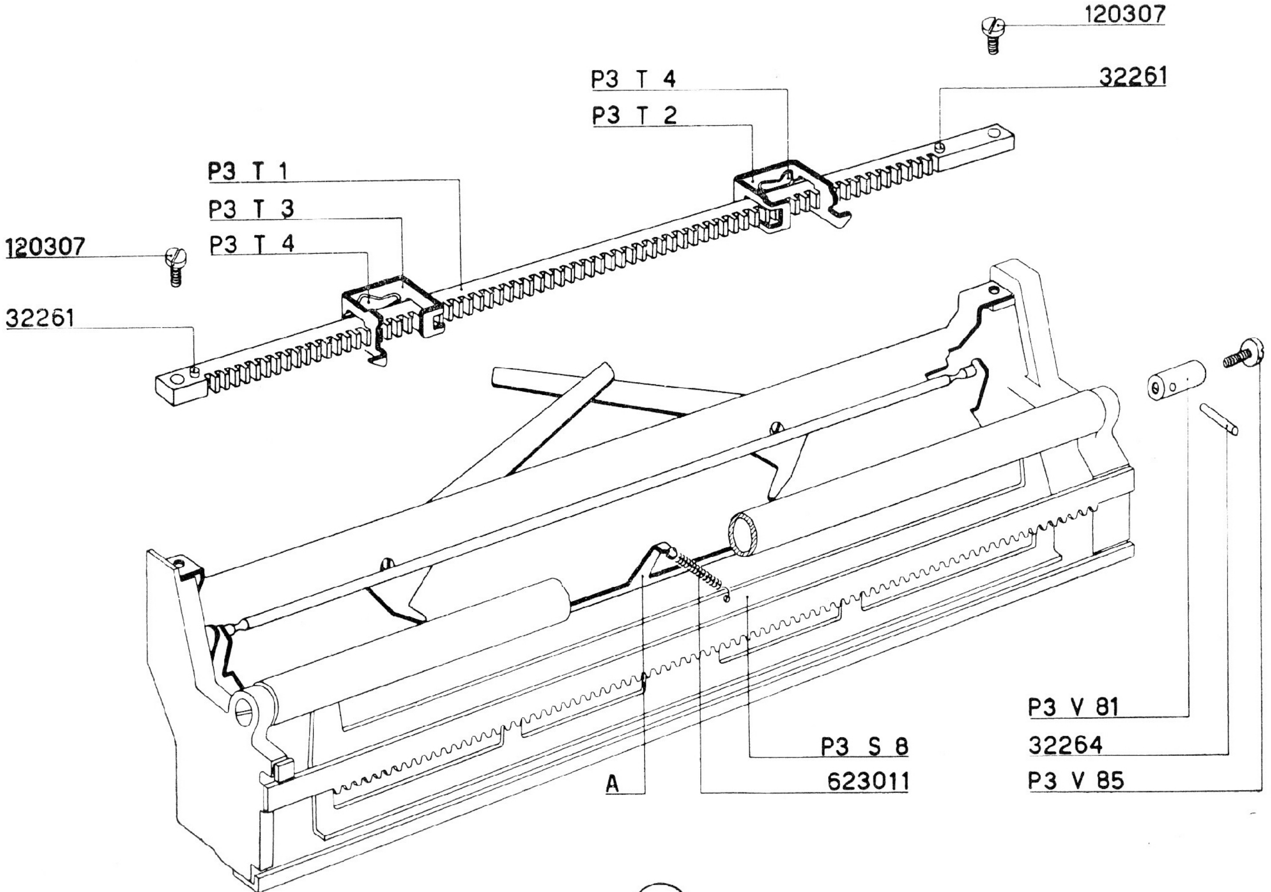
53 - FIGURE 58

Assembling the paper table and the margin rack.

a) Place the paper table (prepared according to paragraph 51) and the margin rack prepared according to the preceding paragraph in position on the slide carriage.

b) Hook the spring 623011 from the carriage release frame P3 S 8 to the anchor point **A** of the paper table.

P3	V	81	Tabulator tube taper plug
P3	V	85	Tabulator tube screw
120	30	7	Cheese head screw for P3 T **1**
32	26	1	Dowel pin for P3 T 1
32	26	4	Dowel pin for P3 V 81
62	30	11	Spring for P3 S **8**



(58)

54 - FIGURE 59

Adjusting the meshing between the escapement pinion and the rack.

a) Place the slide carriage in position on the runway casting.

b) By moving the rack as required obtain the condition shown in the figure. The distance should be checked at the ends and centre of the rack.

Then screw down the screws 1253036 which clamp the rack (figure 54).

55 - FIGURE 60

Adjusting the carriage release.

a) The movement of the carriage release frame should be sufficient to:

— move the loose dog out of engagement with the teeth of the escapement wheel and also to maintain the clearance **L** shown in the figure. This should be tested at the end and the centre of the frame.

— not to move the loose dog into contact with the lug **P** of the runway casting.

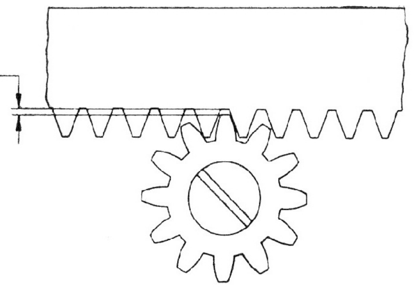
The conditions described are reached by changing the position of the carriage release frame in relation to the two carriage release levers. Then clamp the screws 1203014.

b) When the carriage release frame has operated the two levers should be in contact with the margin rack P3 T 1. This condition is reached by adjusting the height of the margin rack; if this is not sufficient adjust the carriage release levers as required.

P3 T 1 **	Margin rack

** Specify spacing.

120 30 14	Cheese head screw for carriage release frame



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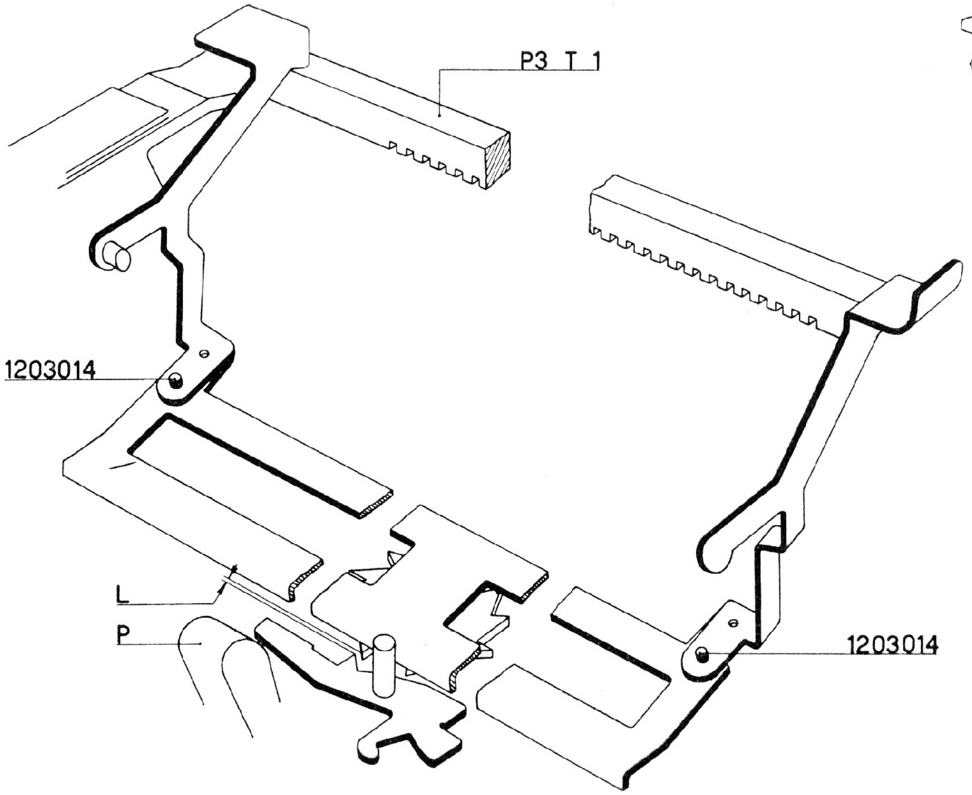

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56 - FIGURES 61 - 62

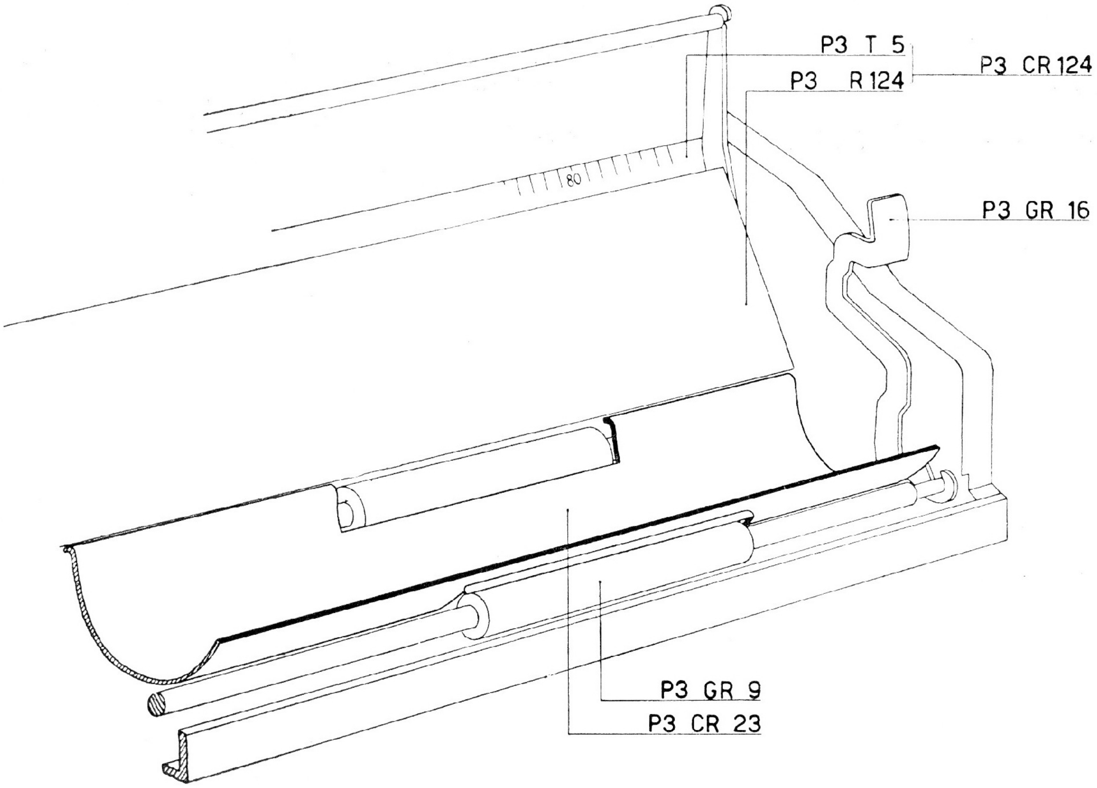
Assembling the paper pan.

Place the paper pan P3 CR 23 in position on the paper release shaft as shown in figure 61.

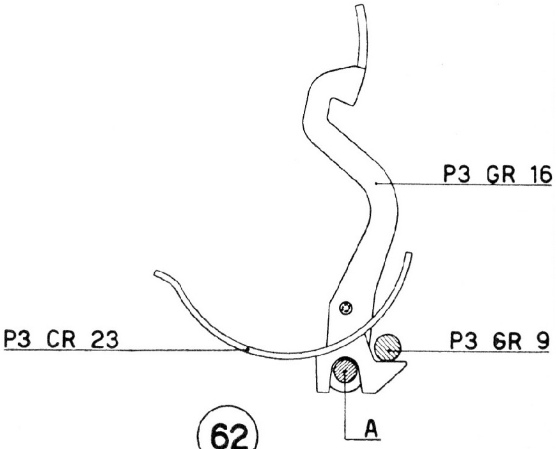
The way the pan should be pivoted can be seen from figure 62.

P3 R 124 **	Paper table
P3 GR 9	Front feed roller shaft assembly
P3 GR 16	Paper release shaft
P3 CR 23	Paper pan
P3 CR 124 **	Paper control frame with graduated bar
P3 T 5 **	Margin scale

** Specify spacing.


P3 T 5
P3 R 124
P3 CR 124
80
P3 GR 16
P3 GR 9
P3 CR 23

61


P3 GR 16
P3 CR 23
P3 6R 9
A

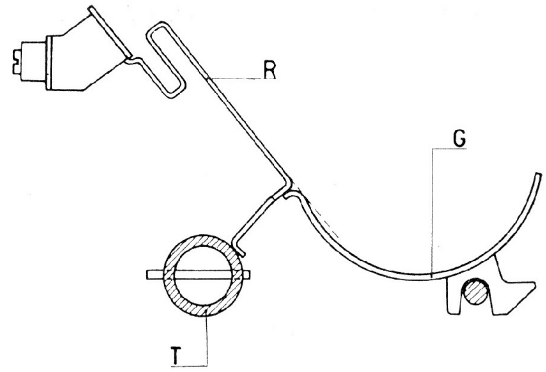
62

57 - FIGURE 63

Adjusting the paper table.

The paper table **R** should be flush with the paper pan **G**. In addition the two fins of the paper table **R** should be in contact with the tabulator tube **T**.

The first condition is reached by bending the paper table as required; the second by adjusting the fins.



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58 - FIGURES 64, 65.

Preparing the clutch.

a) Place the clutch fixing plate P3 U 18 on the clutch shaft P3 U 5. The hole **A** of the former should be aligned with the slot **F** of the P3 U 5.

b) In the hole of the clutch shaft P3 U 5 insert:

— the piston spring P3 U 25
— the clutch operating piston P3 U 24.

c) Depress the clutch operating piston until the hole **B** is aligned with the slot **F** and the hole **A**; then insert the dowel pin. Ensure that the pin does not project from the surface of the fixing plate P3 U 18.

d) Place the platen ratchet P3 U 16 on the unit prepared as above. The teeth of the clutch fixing plate should mesh with the inner teeth of the platen ratchet.

e) Screw on the platen knob P3 GU 8.

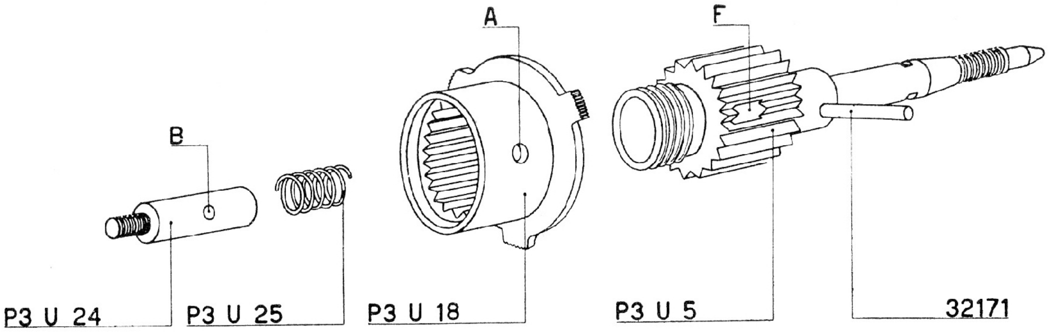
f) Screw the clutch plunger knob P3 GU 22 on to the threaded pin of the clutch operating piston.

g) When the knob P3 GU 22 is pushed inwards the clutch plate P3 U 18 should disengage from the platen ratchet P3 U 16 easily.

P3	U	5	Clutch shaft
P3	U	16 ***	Platen ratchet
P3	U	18	Clutch fixing plate
P3	U	24	Clutch operating piston

*** Specify line spacing.

P3	U	25	Clutch operating piston spring
P3	CU	5	Complete clutch assembly
P3	GU	8	L.H. platen knob
P3	GU	22	Clutch plunger knob
32	17	1	Dowel pin for P3 U 5



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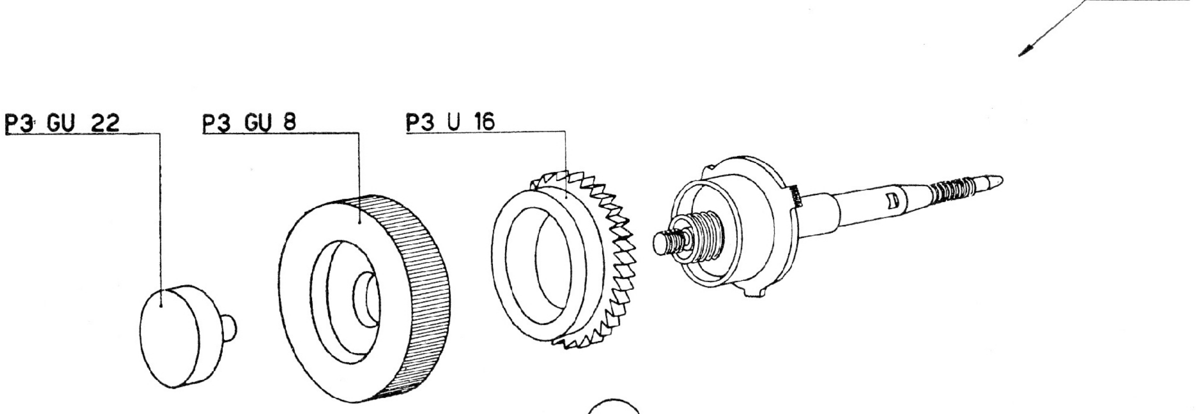

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59 - FIGURE 66

Assembling the platen and platen knobs.

a) Place the platen assembly P3 GU 1 in position in the paper pan P3 CR 23.

b) Assemble to the platen:

— the R.H. platen knob P3 GU 9 with its nut 138601

— the complete clutch assembly, prepared according to paragraph 58.

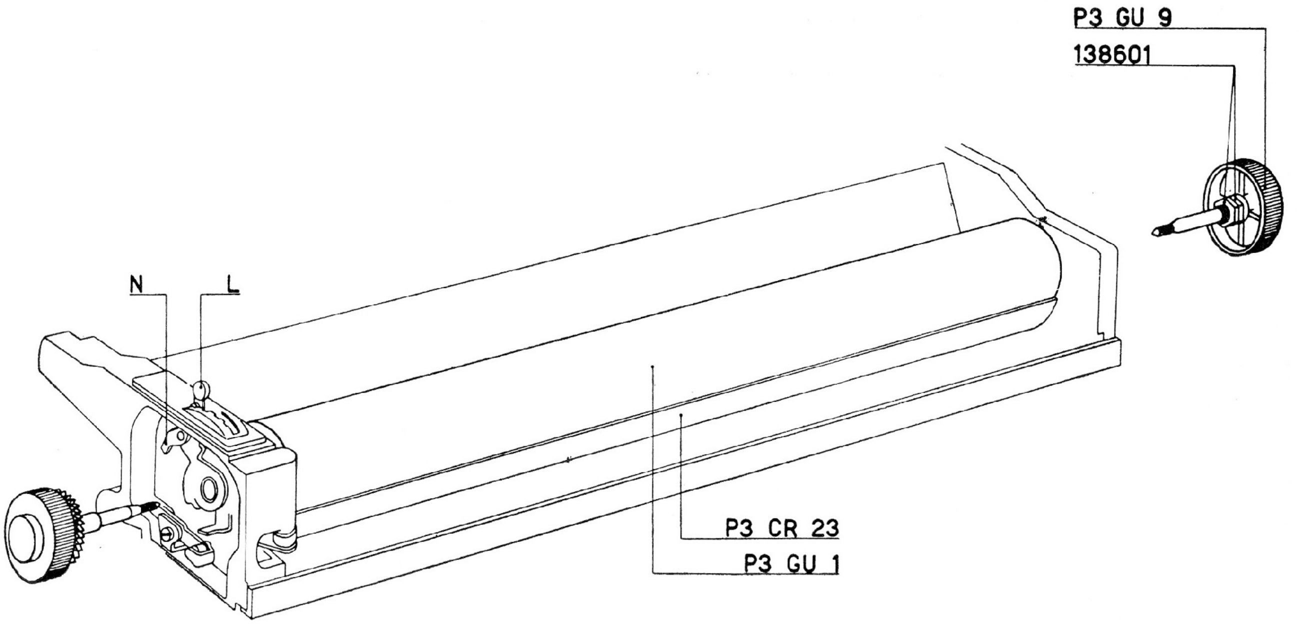
N.B. — The line space selector **L** should be put in position 0. The pawl **N** should rest on the teeth of the platen ratchet.

c) Adjust the axial play of the platen by means of the two nuts 138601; the play should be minimum and the rotation of the platen unimpeded. Use the off-set spanner UA 8006/9x78.

d) Check that the paper pan P3 CR 23 follows the contour of the platen all along its lenght.

e) Operate the paper release lever; ensure that twelve sheets of thin paper pass freely between the feed rollers and the platen. Check that with paper inserted between the feed rollers and the platen it is gripped uniformily along the complete lenght.

P3 CR 23	Paper pan
P3 GU 1	Platen assembled
P3 GU 9	R.H. platen knob
138 60 1	Hexagonal nut for P3 GU 9



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Editor's Note: Lettera 22 platen knobs unscrew Counter-Clockwise to remove.

60 - FIGURES 67 - 68

Adjusting the line spacing mechanism.

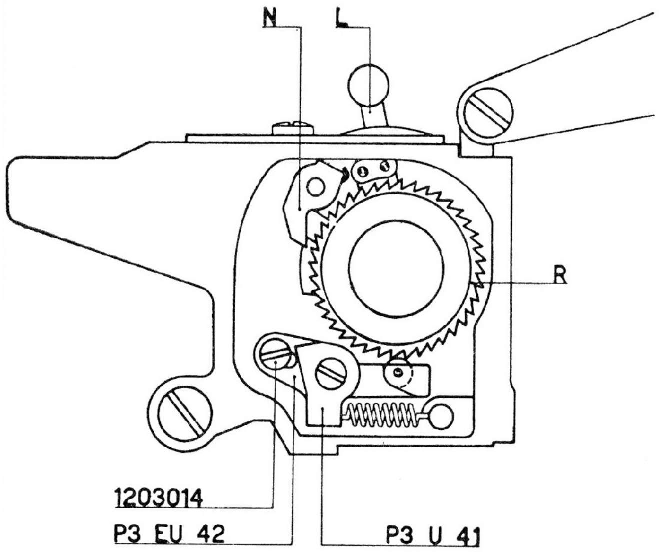
a) Bring the line space selector **L** to position «1». Operate the line space lever and check that the pawl **N** moves the ratchet **R** a distance of two teeth. This condition is reached by moving the position of the detent carrier P3 EU 42 in relation to the stop P3 U 41 (figure 67). Then tighten the screw 1203014.

b) Move the line space indicator P3 U 53 so that, when the line space lever is operated, the tooth of pawl **N** falls exactly in the centre of the space between the teeth of the line space ratchet **R** (figure 68). Then tighten the screw P3 U 54.

P3 U 41	Line space pawl stop
P3 U 53 ***	Line space indicator

*** Specify line spacing.

P3 U 54	Line space indicator screw
P3 EU 42	Line space detent carrier
120 30 14	Cheese head screw for P3 EU 42.



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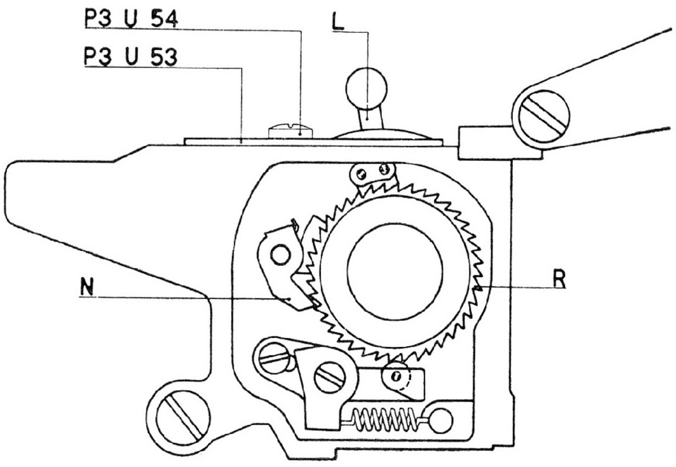

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61 - Coupling the runway casting and the slide carriage.

Assemble the slide carriage on the runway casting so that:
— the tabulator tube is guided by the rollers
— the front rail is guided by the ball bearing and its retaining bracket.

62 - FIGURE 69

Assembling the margin release bar.

a) Hook the connecting link P3 Q 5 to the hole of the margin release operating elbow P3 Q 2. The other end of the link is hooked to the margin release bar P3 Q 1.

b) Place the margin release bar P3 Q 1 between the support screws P3 Q 35. Adjust the latter temporarily so that the bar is just pivoted ignoring its lateral position.

c) Secure the support P3 Q 6 with a screw **V** (3 mm. diameter).

63 - FIGURES 70 - 71

Assembling the ribbon vibrator and the line finder.

a) Fit the colour change roller support P3 L 45 with the roller P3 L 40 assembled, to the ribbon vibrator P3 GL 51; the **A** should rest on the roller.

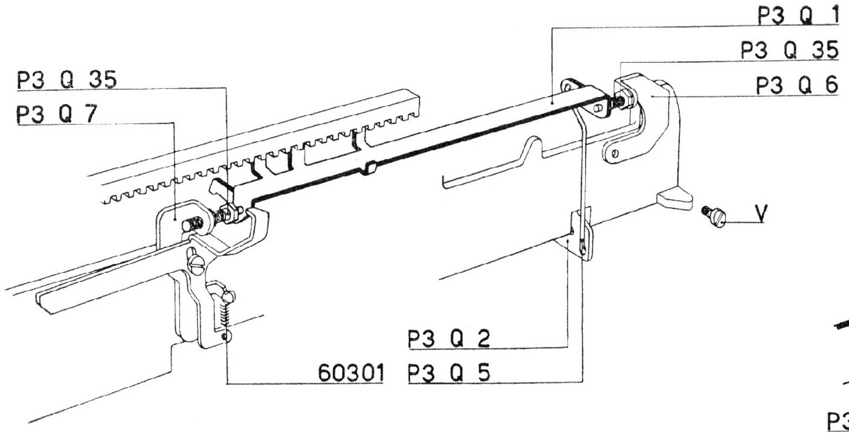
b) Using screws 1253036, assemble to the runway casting:
— the ribbon vibrator P3 GL 51
— the line finder P3 P 11.

The two screws should be only friction tight.

P3 L 40	Colour change roller
P3 L 45	Colour change roller support
P3 GL 51	Ribbon vibrator
P3 P 11 **	Line finder
P3 Q 1 **	Margin release bar
P3 Q 2	Margin release operating elbow

** Specify spacing.

P3 Q 5	Margin release bar connecting link
P3 Q 6	L.H. margin release bar support
P3 Q 7	R.H. margin release bar support
P3 Q 35	Margin release bar support screw
125 30 36	Cheese head screw for P3 P 11 and P3 GL 51
60 30 1	Spring for bell hammer



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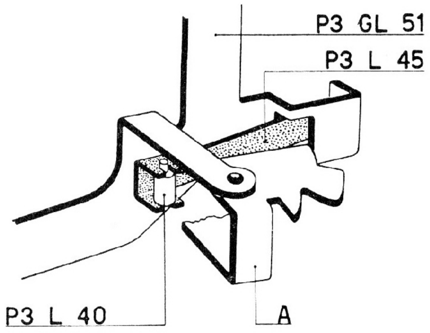

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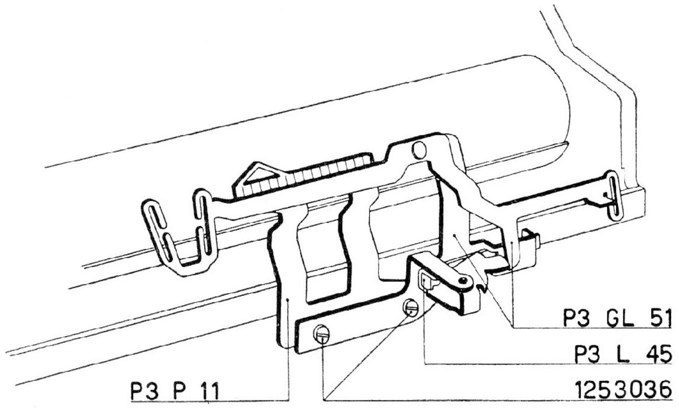

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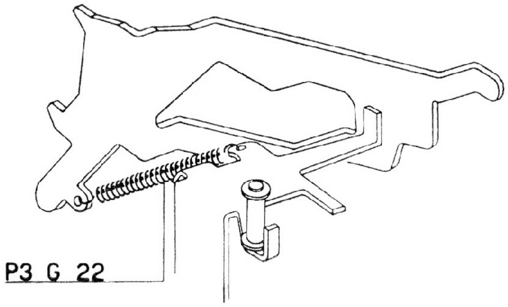
64 - FIGURES 72 - 73

Fitting the L. H. and R. H. segment springs.

a) Hook the spring P3 G 22 between the R. H. support plate of the ribbon spool and the R. H. support bracket of the segment (figure 72).

b) Hook the spring P3 G 20 between the L. H. support plate of the ribbon spool and the L. H. support bracket of the segment (figure 73).

P3	G	20	L. H. segment spring
P3	G	22	R. H. segment spring



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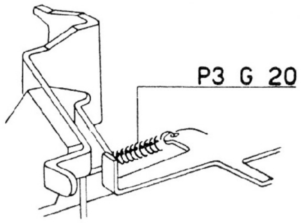
N. B. — Spring P3 G 22 has a larger diameter than spring P3 G 20, but the latter P3 G 20 is stronger than the P3 G 22.

65 - FIGURE 74

Assembling the ribbon vibrator connecting link.

Hook the ribbon vibrator connecting link P3 L 46 on the ribbon drive P3 EL 3 as shown in the figure.

P3	L	46	Ribbon vibrator connecting link
P3	EL	3	Ribbon drive with pawl



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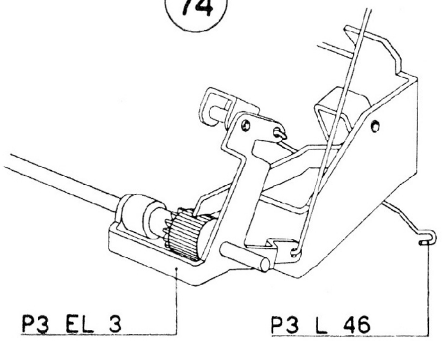


66 - FIGURES 75 - 76 - 77

Assembling the carriage on the machine.

a) Remove the distance piece UP 21 which has been used for connecting the sides temporarily (see figure 12).

b) Place the carriage in position on the machine and carry out the following operations:

— insert the link P3 L 46 in the proper seat of the ribbon vibrator (figures 75 and 77).

— position the fulcrum wire P3 V 15 (tabulator mechanism) in the slot on the L. H. side of the frame (figure 76).

N.B. — The runvay casting on the carriage should rest on the four adjusting screws P3 I 12 mounted on the two sides of the machine frame (figure 12).

c) Secure the carriage with four screws 120307 which should only be partially tightened.

d) Hook the carriage draw band to its anchor point **A** on the R. H. side of the slide carriage (figure 75).

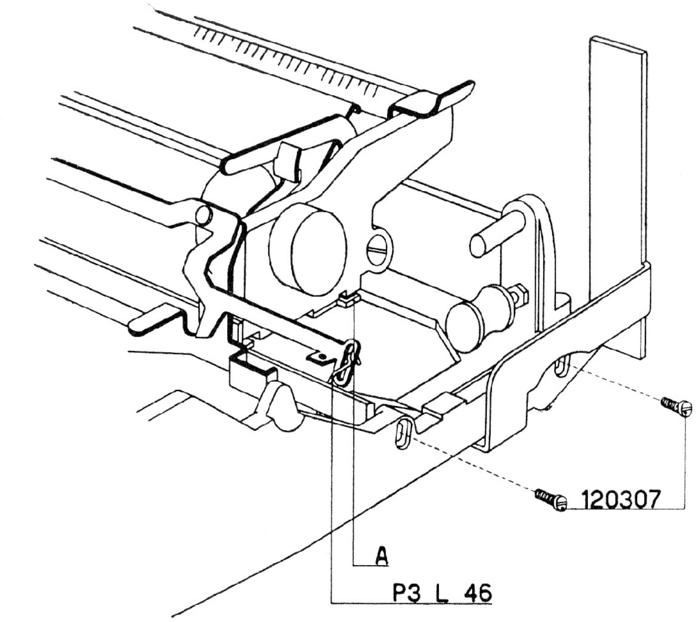
67 - FIGURE 77

Hooking the ribbon vibrator spring.

Hook the spring N3 V 52 between the ribbon vibrator and the ribbon drive with pawl P3 EL 3.

P3 L 46	Ribbon vibrator connecting link
P3 EL 3	Ribbon drive with pawl
P3 V 15	Tabulator frame fulcrum wire

P3 V 30	Tabulator setting and clearing operating bracket
N3 V 52	Ribbon vibrator spring
120 30 7	Cheese head screw for carriage.



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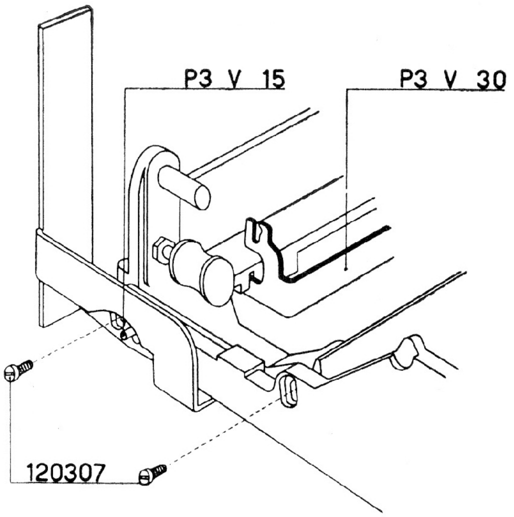

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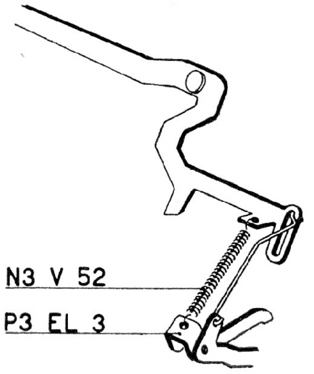

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68. - FIGURE 78

Assembling the control links.

a) Fit the link P3 N 2 between the back space key lever P3 N 101 and its operating lever P3 EN 5. Close the jaw of the lever P3 N 101 with a pair of pliers.

b) Fit the link P3 V 3 between the tabulator key lever P3 V 1 and its operating lever P3 V 6. Close the jaws of the lever P3 V 1 with a pair of pliers.

c) Hook the link P3 L 48 between the ribbon colour change lever P3 EL 59 and the colour change cam **P**

d) Hook the link P3 H 11 between the connecting bracket of the space bar lever P3 H 3 and the arm of the rocker plate P3 I 110.

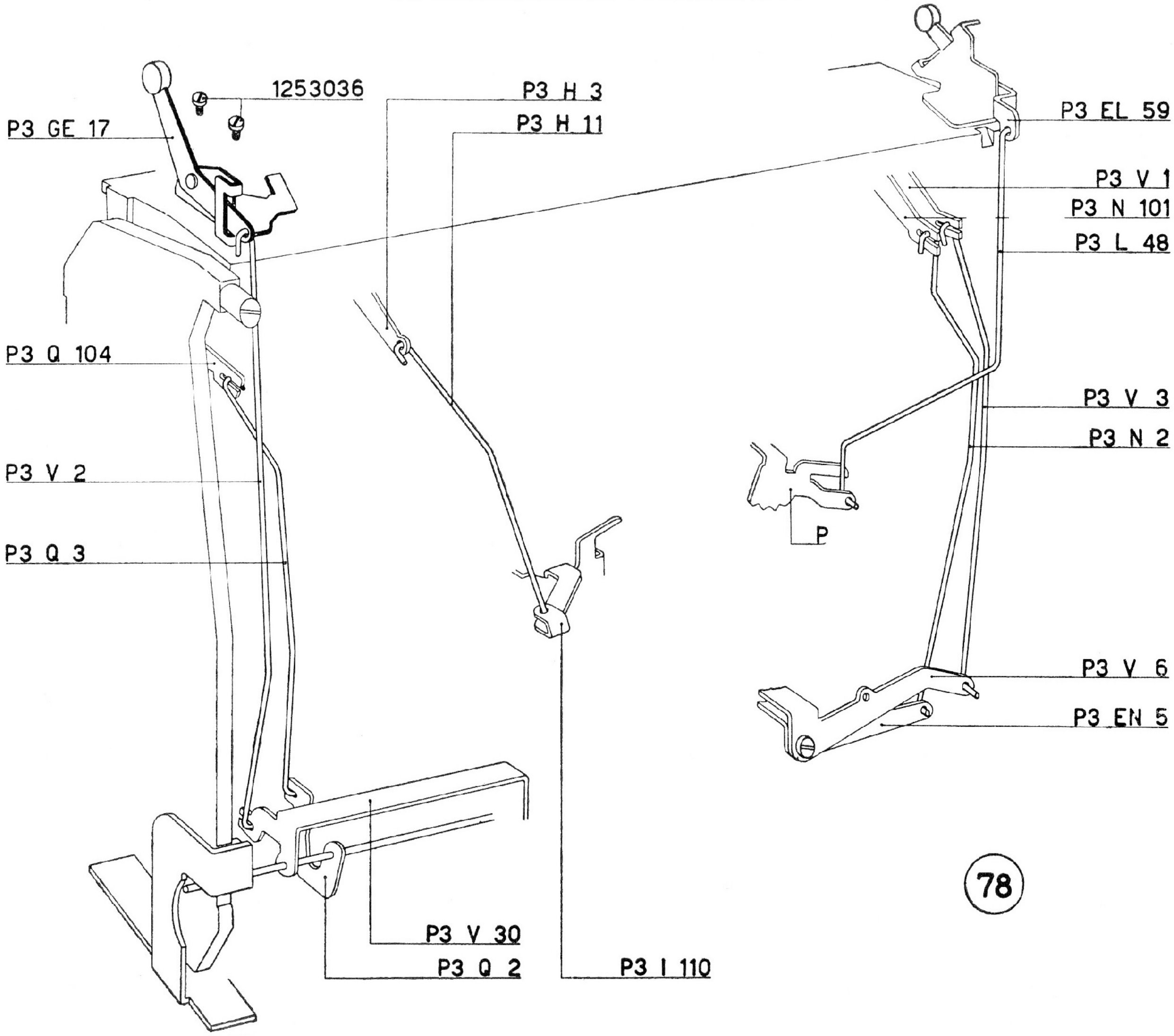
e) Fit the link P3 Q 3 between the margin release key lever P3 Q 104 and the elbow P3 Q 2. Close the jaw of the key lever and the gear with a pair of pliers.

f) Hook one end of link P3 V 2 to the tabulator setting and clearing lever P3 EG 17; fit the other end to the frame P3 V 30.

Clamp P3 EG 17 to the key levers comb with two screws 1253036 which should only be partially tightened. Close the jaws of the frame P3 V 30 with a pair of pliers.

P3 EG 17	Shift lock plate with setting and clearing lever
P3 H 3	Space bar connecting bracket
P3 H 11	Space bar connecting link
P3 I 110	Rocker plate
P3 L 48	Colour change connecting link
P3 EL 59	Ribbon colour change lever
P3 N 2	Back space operating link
P3 N 101	Back space key lever
P3 EN 5	Back spacing lever

P3 Q 2	Margin release operating elbow
P3 Q 3	Margin release connecting link
P3 Q 104	Margin release key lever
P3 V 1	Tabulator key lever
P3 V 2	Tabulator setting and clearing link
P3 V 3	Tabulator operating link
P3 V 6	Tabulator operating lever
P3 V 30	Tabulator setting and clearing operating bracket
125 30 36	Special screw for P3 EG 17.



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69 - FIGURE 79

Adjusting the lateral play of the type bar segment.

a) The type bar segment should not have any lateral play but its vertical movement (passing from small letters position to capitals and vice-versa) should be unimpeded.

To reach the required conditions, proceed as follows:

— bring the head of the screw P3 E 14 just barely into contact with the inner face of the supports **D** and **S** of the segment. Lock the nuts 138305 of the P3 E 14.

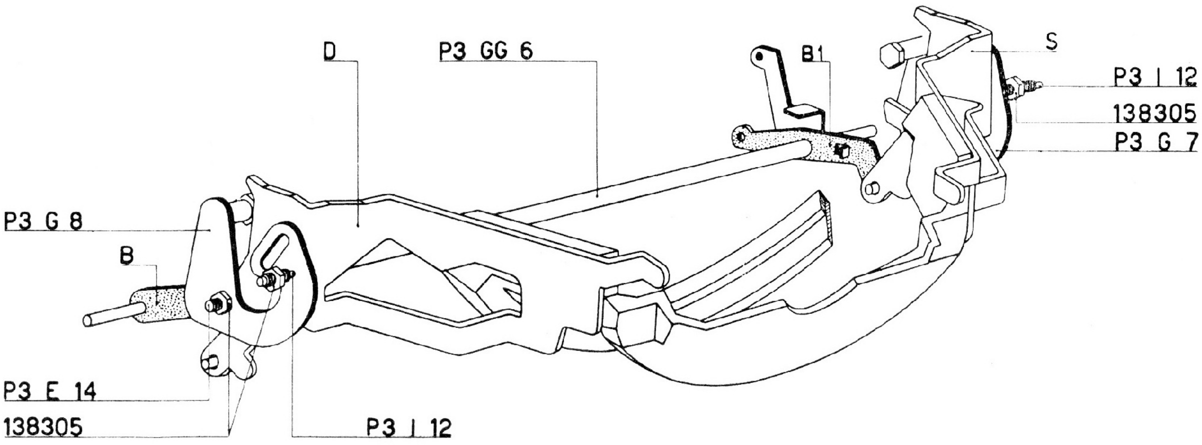
— bring the adjusting screws P3 I 12 into contact with the outer face of the ball guide plates P3 G 7 and P3 G 8. Hook the nuts 138305 of the screws P3 I 12.

b) The arms **B** and **B1** of the shift shaft P3 GG 6 should be equidistant from the supports **D** and **S** of the type bar segment.

To obtain these conditions move the shaft sideways, adjusting its conical support pivot. The shaft should have no axial play with perfect freedom to rotate.

c) Strike some of the keys and check that the side supports of the segment are not flexed. If this occurs, the adjustment indicated in section *a*) has not been carried out correctly.

P3 E 14	Segment support adjusting screw
P3 G 7	L. H. ball guide plate
P3 G 8	R. H. ball guide plate
P3 GG 6	Shift shaft assembly
P3 I 12	Adjusting screw for P3 G 7 and P3 G 8
138 30 5	Hexagonal nut for P3 E 14 and P3 I 12



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70 - FIGURE 80

Temporary adjustment of the type bar and space bar trip.

a) Adjust the trip temporarily by moving the screw P3 R 15 on the rocker plate P3 I 110.

b) Also adjust the trip of the spacer by lengthening or shortening the link P3 H 11.

71 - FIGURE 81.

Adjusting the alignment between the capital and small letters.

The stop P3 G 11 determines the position of the type bar segment in the small letters position. The upper L. H. and R. H. stops P3 G 12 should be adjusted to obtain perfect alignment between the capital and small letters. The maximum eccentricity of the stops in question should be turned towards the segment. A paper feeler should be held equally on both the L. H. and R. H. stops P3 G 12 and their corresponding brackets of the segment.

72 - FIGURE 82

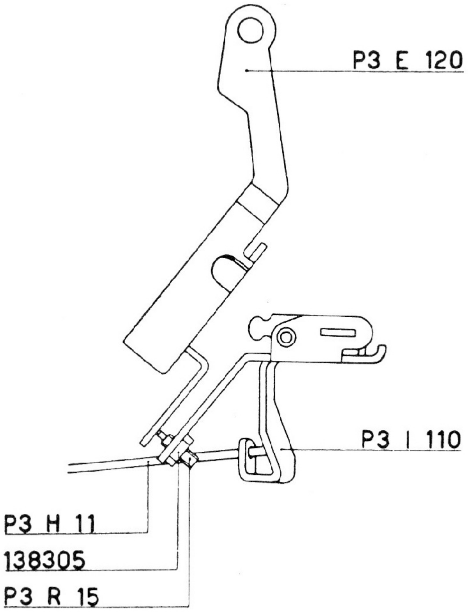
Adjusting the small letters lock.

In the small letters position, the type bar segment should be locked by the arm **B** of the shift frame.

The arm in question should be bent so that it is perpendicular in relation to the sides of the machine frame and in contact with the tongue **A** of the L. H. support of the type bar segment. When the shift key is depressed, the arm **A** should slip off the tongue **B** smoothly.

P3	E 120	Universal bar frame
P3	G 11	L. H. lower shift stop
P3	G 12	Upper shift stop
P3	H 11	Space bar connecting link

P3	I 110	Rocker plate
P3	R 15	Adjusting screw for P3 I 110
138 30 5		Hexagonal nut for P3 R 15.



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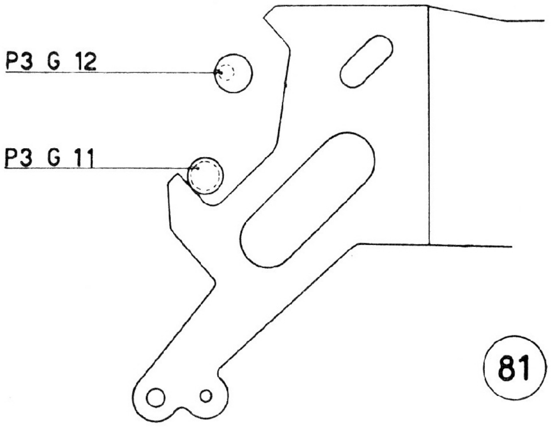

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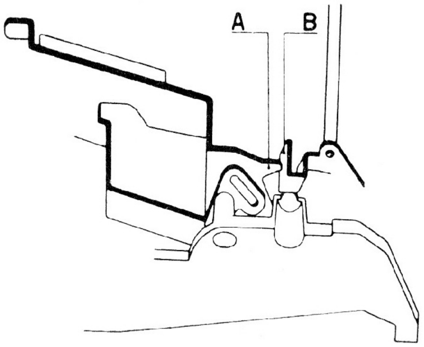

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73 - FIGURE 83

Adjusting the shift lock.

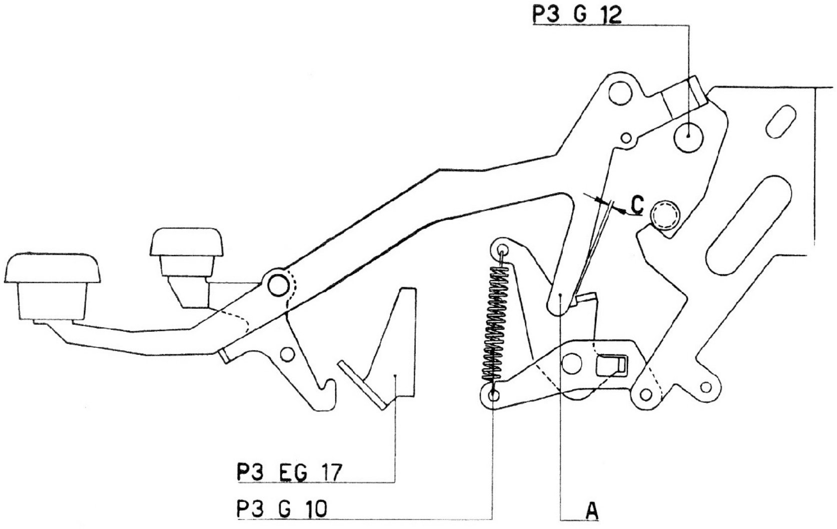
Depress the shift key until the segment support arms are against the upper stops P3 G 12.

In this position the shift lock lever should not be able to hook to the shift lock plate P3 EG 17.

When the capital key is lowered further, the flexible coupling on the shift shaft operates, as will be seen from the increased tension of the spring P3 G 10, and it is only then that the shift lock lever can hook to the shift lock plate P3 EG 17.

In this position check that the side supports of the segment are in contact (according to the instructions in paragraph 71) with the stops P3 G 12. The conditions are reached by adjusting the height of the shift lock plate P3 EG 17. If this is not satisfactory, the shape of tongue **A** must be changed. In this manner the clearance **C** between the arm and the flexible coupling of the shift shaft is either increased or decreased.

P3	G	10	Flexible coupling spring of the shift
P3	G	12	Upper shift stop
P3	EG	17	Shift lock plate with tabulator setting and clearing lever.



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Adjusting the impression and the type bar arrest.

The runway casting of the carriage rests on the two front adjusting screws **A** and two back ones **P** (figure 84).

The correction of the impression and the type bar arrest (in relation to the platen and the segment anvil) should be carried out together by adjusting as is explained below the stops **A** and **P**.

Impression.

Operate the shift motion and type all the capital letters gently.

If the printing is light on the top, the platen is too low; therefore, the position of the platen must be highered by screwing in the stops **A**.

If the printing is light on the bottom, the platen is too high; therefore, the position of the platen must be lowered by unscrewing the stops **A**.

The correct position will be when the printing is uniform; i. e. an equal impression on top and bottom of all the characters.

Type bar arrest.

The arrest at the platen and the segment anvil should be checked as follows:

	On the platen	On the anvil
1 sheet of paper on the platen .003" (0.08 mm) thick	Yes	Yes
Ribbon	Yes	No
Paper feeler .003" (0.08 mm)	Yes	Yes

a) Testing the arrest at the platen, press the type bar gently at the point indicated by the arrow in figure 85.

b) Testing the arrest at the segment anvil, press the type bar gently at the point indicated by the arrow in figure 86.

The paper feeler **S** should be equally held on the platen and the segment anvil. If the arrest is not firm on the platen, it will be necessary to move the platen forward, i. e. screwing in the stops **P**.

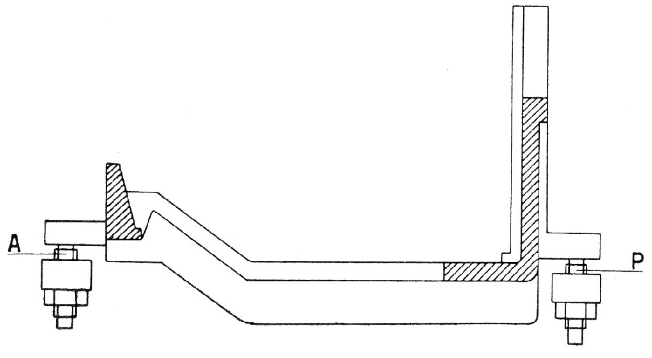
If the arrest is not firm on the segment anvil, it will be necessary to move the platen backwards, i. e. unscrewing the stops **P**.

N.B. — The two stops **A** and the two stops **P** should always be screwed or unscrewed an equal amount so that the runway casting rests on all four stops.

When it is found necessary to adjust the stops, the following sequence of operations should be carried out.

— temporary adjustment of the impression
— temporary adjustment of the type bar arrest
— Final adjustment of the impression
— Final adjustment of the type bar arrest
— Re-check the impression.

When the above conditions have been satisfied, tighten down completely the four screws securing the carriage to the frame of the machine.



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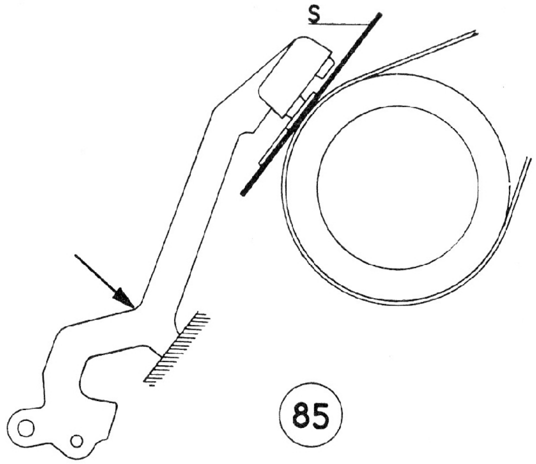

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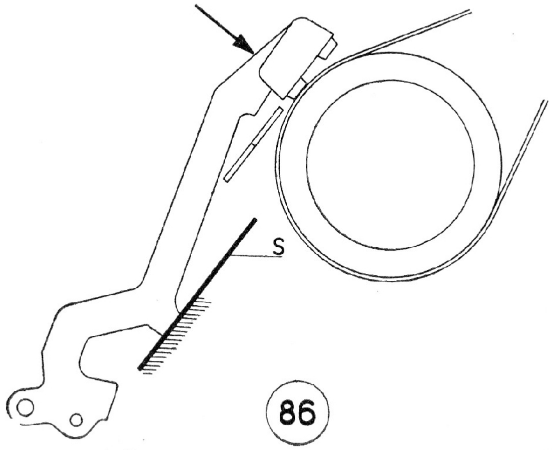


86

75 - FIGURES 87 - 88 - 89.

Final adjustment of the type bar trip.

a) The side and centre type bars should operate the trip of the rocker plate when the respective type is .08″÷.27″ (2÷7 mm.) from the platen (figure 88). Possible differences on the side and centre type bars are corrected by adjusting the brackets of the universal bar frame using the bender UA 8047/2×9 (figure 87).

The desired dimension is obtained by adjusting the screw P3 R 15 (figure 89) described for the temporary adjustment of the trip.

The uniformity of the trip on capital and small letters is obtained by adjusting the tongue **A** of the universal bar frame P3 E 120 as required (figure 89).

b) When the conditions described above have been reached, carry out the following tests:

— raise a type bar and bring it into contact with the platen

— check that a slight clearance **L** has remained for the rocker plate P3 I 110 as shown in figure 89. If necessary move the rocker adjusting screw P3 I 14.

76 - FIGURE 89

Adjusting the space bar trip.

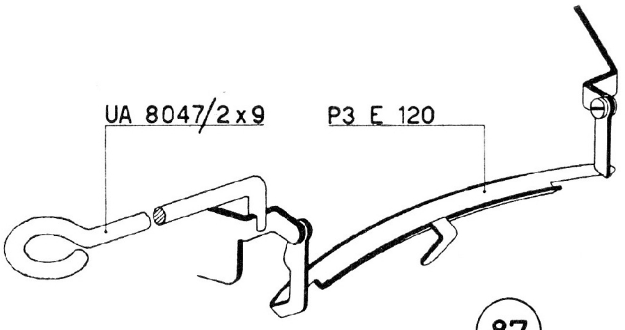
The rocket plate trip should take place when the space bar has completed half its stroke. The condition is reached by adjusting the link P3 H 11.

77 - Adjusting the line finder.

Strike a series of letter I. Move the line finder so that its graduations are vertically aligned with the letters and the top edge is in line with the bottom edge of the letter I. It should also be .04″ (1 mm) from the platen and twelve sheets of standard paper should pass freely between the indicator and the platen.

Tighten the screws which clamp the indicator to the carriage.

P3	E 120	Universal bar frame
P3	H 11	Space bar link
P3	I 14	Rocker plate adjusting screw
P3	I 110	Rocker plate
P3	R 15	Adjusting screw for P3 I 110
138	30 5	Hexagonal nut for P3 R 15



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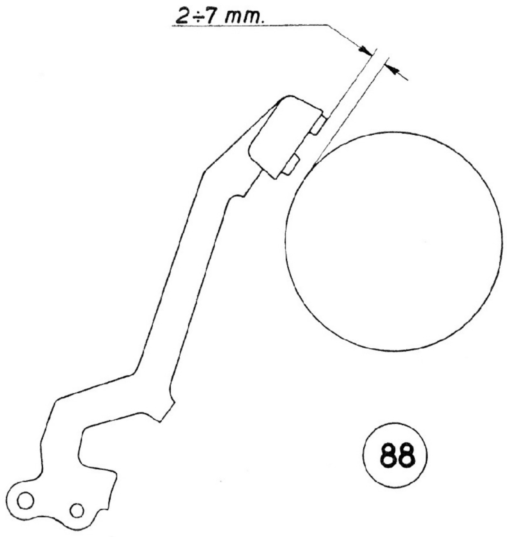

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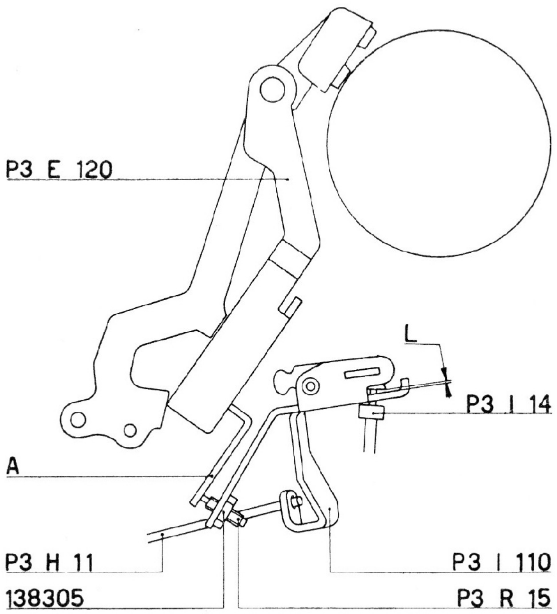


78 - FIGURES 90 - 91 - 92

Adjusting the colour change mechanism.

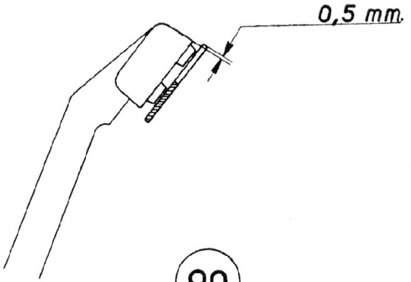
a) Bring the colour change lever into the blue position; check, by pushing the lever upwards that it still has an extra elastic movement.

Bring the colour change lever to red; check that it has the same extra elastic movement but in downward direction.

This condition is reached by lengthening or shortening the link P3 L 48 (figure 78).

b) Bring the colour change lever onto the black and the basket in the small letters position. Raise a type bar by hand until it is in contact with the platen. There should be the dimension shown in figure 90; to obtain this, it is necessary to adjust the bracket **S** of the cam **M** (figure 91). Moving the bracket in direction **A** (shown by arrow) the ribbon upward movement is increased; when the bracket is moved in direction **B**, the ribbon movement remains lower.

c) Bring the colour change lever to red and keep the basket on capitals. The conditions shown in figure 92 should be found.



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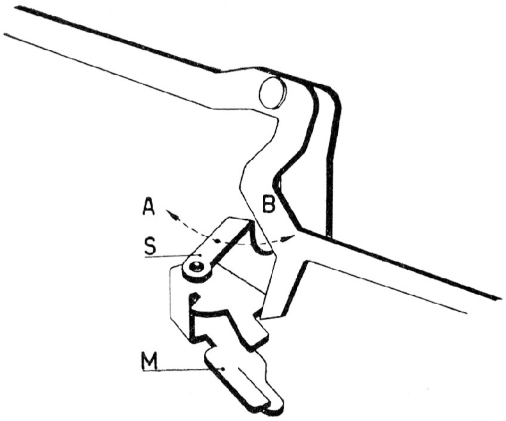

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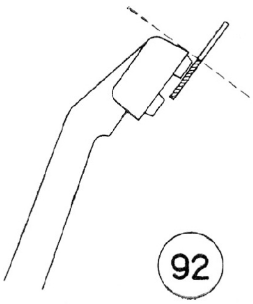


92

79 - FIGURES 93 - 94

Adjusting the stencil position.

a) Bring the colour change lever to the stencil position.

b) Check that the tongue **K** of the ribbon vibrator barely touches the centre stop of the cam **M** (figure 94).

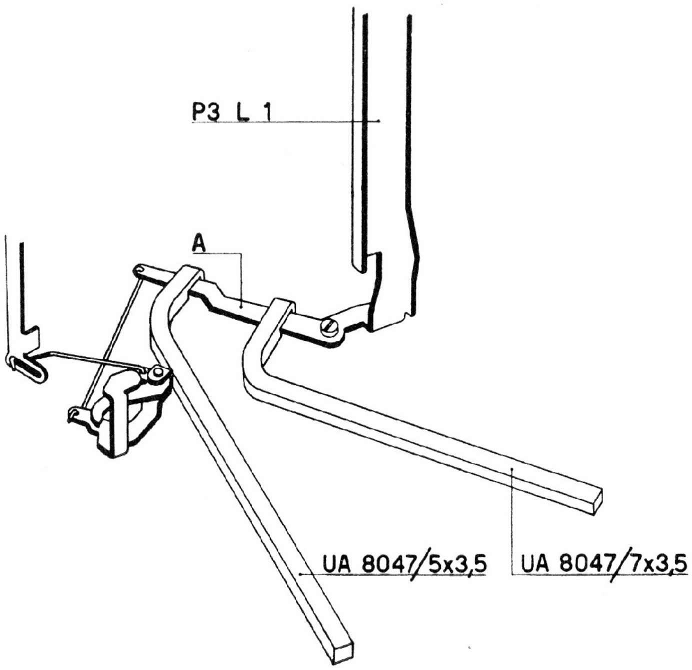
To obtain these conditions, use two special benders, and adjust the arm **A** of the ribbon drive plate P3 L 1 (figure 93).

c) To check this adjustment the following conditions should be obtained:

— with the colour change lever on stencil; striking a series of keys the ribbon vibrator does not move.

— changing the lever from red to black or vice-versa, the ribbon vibrator does not move.

P3 L 1 Ribbon drive plate



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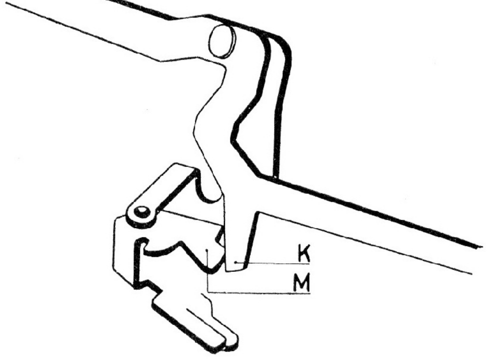


80 - FIGURES 95 - 96 - 97

Adjusting the margin release bar.

a) Bring the margin release bar P3 Q 1 into contact with the support screw P3 Q 35 of the R. H. support P3 Q 7. The clearance shown in figure 95 should be maintained.

b) Bring the R. H. margin stop **M** to the seventieth space. Move the carriage until the last space but one before the locking takes place.

The tongue **A** of the margin stop **M** should barely touch the lug **K** of the release bar (figure 96). This condition is obtained by moving the support screw P3 Q 35 mentioned above. Lock the nut 138 305.

c) Move the carriage one more space; the bar P3 Q 1 follows the movement of the margin stop and comes in contact with the L. H. support screw P3 Q 35 (figure 97). The distance moved by the bar should equal one pitch less .008″ (0,2 mm.). These conditions are obtained by moving the L. H. support screw P3 Q 35. To check this adjustment, proceed as follows:

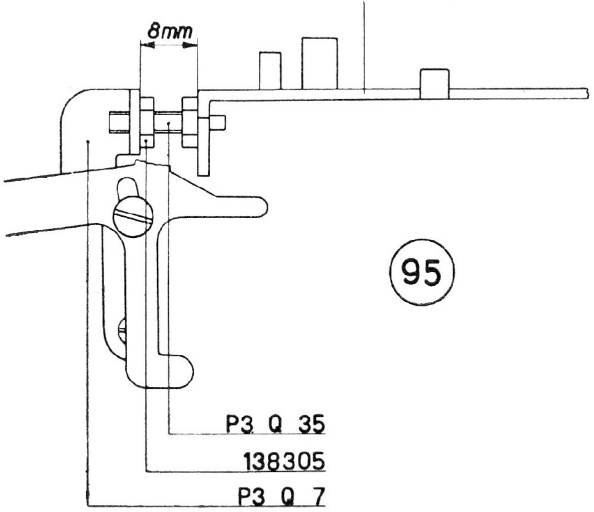
— strike a key continuously until the margin stop is at the last space but one; strike the key again.

— the bar P3 Q 1 should move and enter into contact with the L. H. support.

— turn the margin release bar upwards; the carriage should move a distance of .008″ (0,2 mm.) more.

P3 Q 1 **	Margin release bar
P3 Q 6	L. H. margin release bar support
P3 Q 7	R. H. margin release bar support
P3 Q 35	Margin release bar support screw
138 30 5	Hexagonal nut for P3 Q 35

** Specify spacing.



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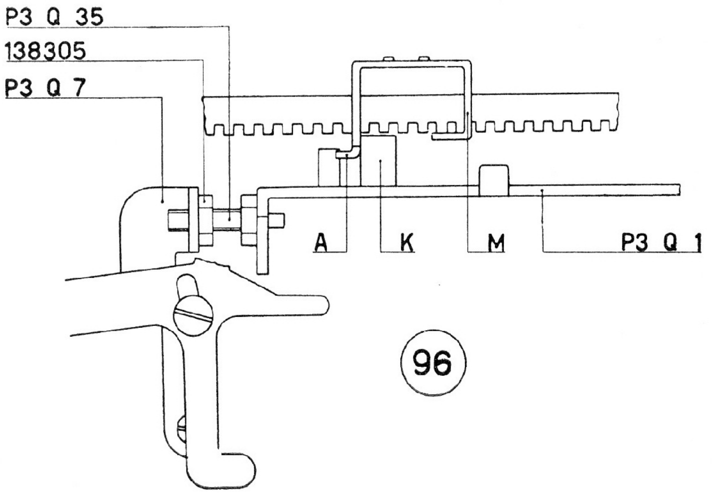

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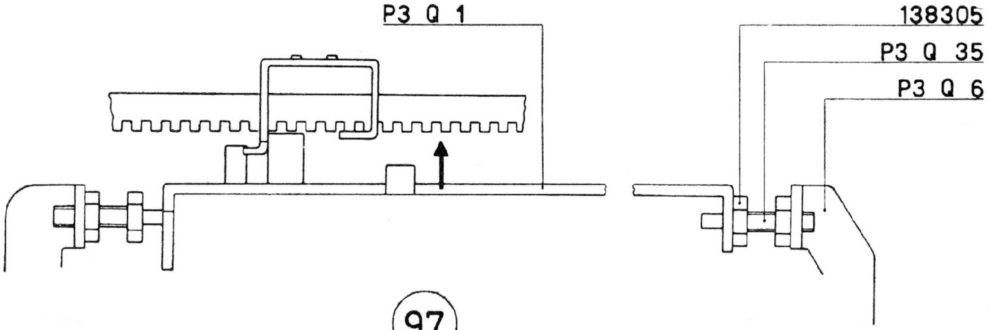

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81 - FIGURE 98

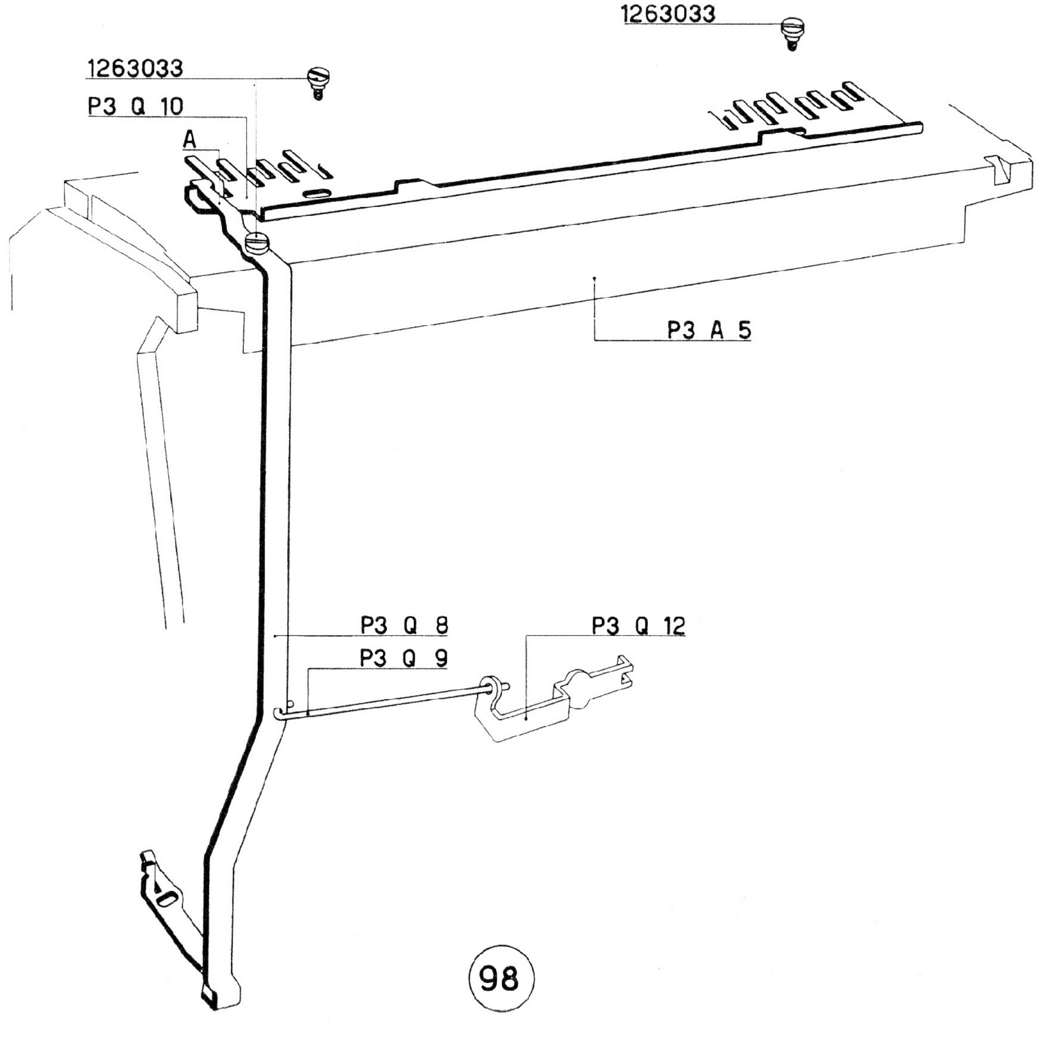
Assembling the key lever locking plate and locking bar.

a) Place the key lever locking plate P3 Q 10 in position on the key lever comb P3 A 5 with two shoulder screws 1263033.

b) Secure the front part of the locking bar P3 Q 8 on the comb with a shoulder screw 1263033. Its vertical arm **A** should be inserted in the slot of the locking plate P3 Q 10.

c) Place the link P3 Q 9 between the locking bar P3 Q 8 and the rocker plate locking guide P3 Q 12.

P3	A	5	Key lever comb
P3	Q	8	Key lever locking bar
P3	Q	9	Rocker plate locking link
P3	Q	10	Key lever locking plate
P3	Q	12	Rocker plate locking guide
126	30	33	Shoulder screw P3 Q 8, P3 Q 10.



(98)

82 - FIGURE 99

Adjusting the keyboard lock.

a) Place the locking bar P3 Q 8 on the runway casting of the carriage securing it with shoulder screw 1263041; (the screw **V** which has been temporarily used must be removed, figure 69).

The upper arm **A** of the bar should be in contact with the margin release bar P3 Q 1.

b) Hook the spring 623011 between the locking bar P3 Q 8 and the anchor hole on the runway casting.

c) Ensure that there is no play between the locking bar P3 Q 1 and the elbow P3 Q 2; it will be sufficient to check that the tongue **B** of the bar P3 Q 1 just touches the support P3 Q 7.

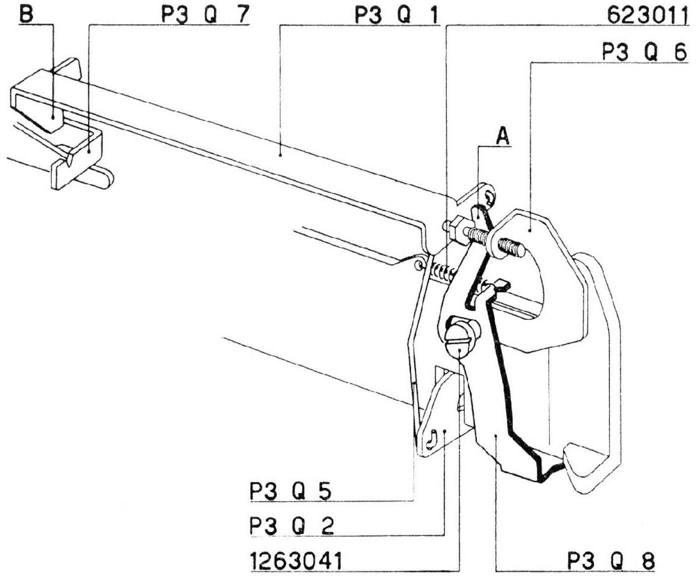
Adjust on the vertical link P3 Q 5 if required.

d) With the margin release bar P3 Q 1 in the normal position, the key levers should be able to pass through the spaces of the corresponding locking plate P3 Q 10; when the bar P3 Q 1 has operated (i. e. completely to the left) the key levers should be locked by the plate in question.

These conditions are obtained when arm **A** of locking bar P3 Q 8 is slightly in contact with margin release bar P3 Q 1 when the latter is in its normal position.

P3	Q	1 **	Margin release bar
P3	Q	2	Margin release operating elbow
P3	Q	5	Margin release bar connecting link
P3	Q	6	L. H. margin release bar support
P3	Q	7	R. H. margin release bar support

** Specify spacing.



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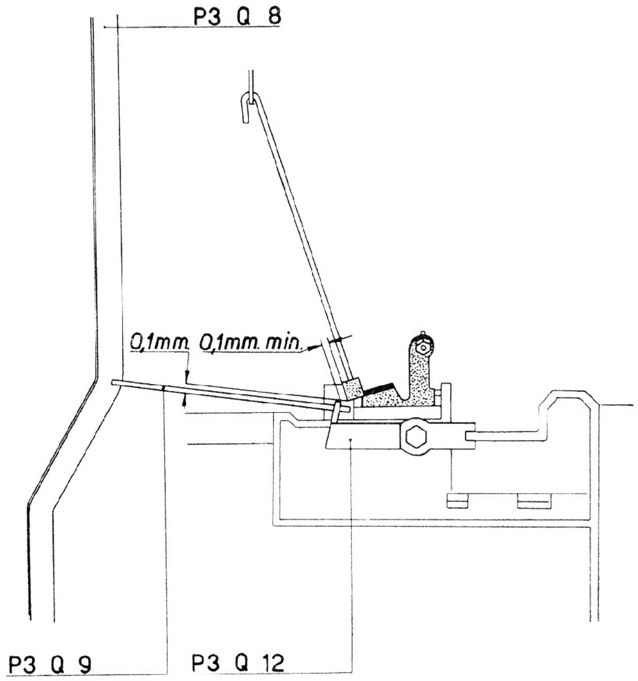
83 - FIGURE 100

Locking the rocker plate.

As the key lever locking occurs, the link P3 Q 9 moves to the right and locks the rocker plate, i. e. stops the full movement of the rocker, The clearance shown in the figure should be observed.

P3	Q	8	Key lever locking bar
P3	Q	9	Rocker plate locking link
P3	Q	12	Rocker plate locking guide
126	30	41	Shoulder screw P3 Q 8
62	30	11	Spring for P3 Q 8



100

84 - FIGURE 101

Adjusting the tabulator clearing.

Move the support bracket P3 EV 124 of the tabulator axially so as to obtain the distance shown in the figure. Then tighten the two screws 1253036.

85 - FIGURES 102 - 103 - 104

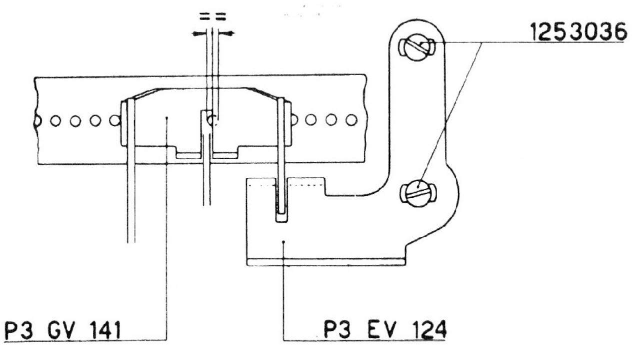
Adjusting the linkage of the tabulator.

In the normal position, the tabulator key lever P3 V 1 should be in contact with the key lever rest pad P3 A 10 (figure 102).

When the tabulator key is lowered, the tongue **T** of the key lever P3 V 1 should move and rest against the stop **A** of the key lever comb (figure 102).

These two conditions are reached by changing the bend of the lever P3 V 6. With this adjustment carried out, the following conditions on the tabulator mechanism should be found.

P3 A 10	Key lever rest pad
P3 V 1	Tabulator key lever
P3 V 3	Tabulator operating link
P3 V 6	Tabulator operating lever
P3 EV 124	Tabulator support bracket with finger
P3 GV 141	Tabulator clearing
125 30 36	Special screw for P3 EV 124.



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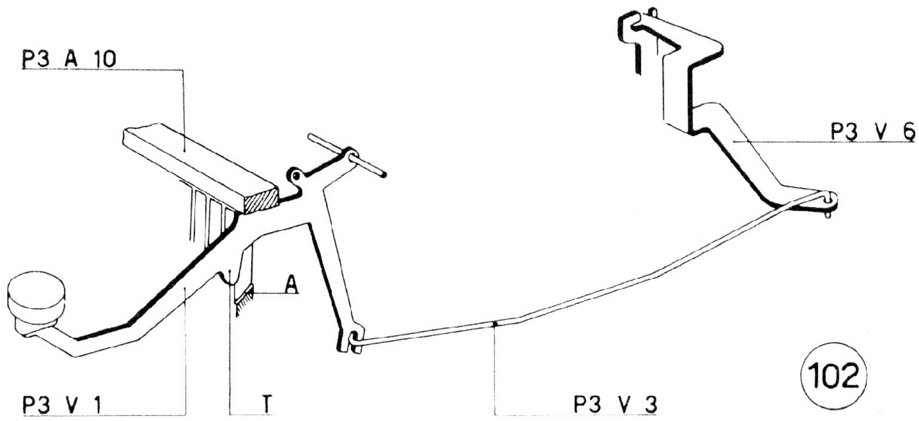


(102)

a) figure 103. With the tabulator key lever in normal position the tabulator finger **D** should be .06″ (1,5 mm.) away from the stops.

b) figure 104. When the tabulator lever is depressed, the tabulator finger **D** should be .02″ (0,5 mm.) higher than the stops and .02″ (0,5 mm.) away from the tabulator tube.

86 - FIGURE 105

Adjusting the tabulator brake.

a) When the tabulator key is in the normal position the brake shoe should be .02″ (0,5 mm.) from the tabulator tube. The conditions are reached by bending the arm **C**.

b) The braking force is increased or decreased by changing the tension of the spring 63405.

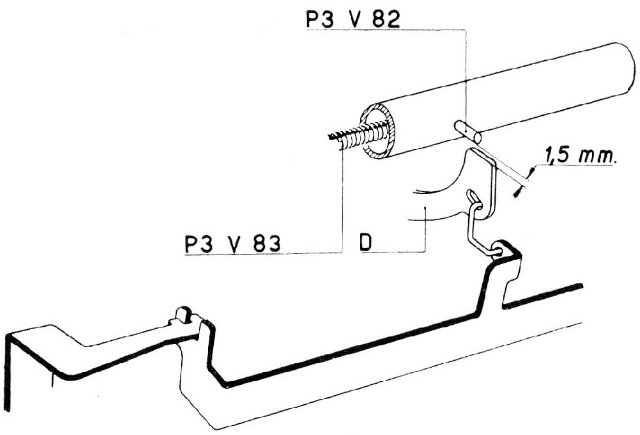
87 - Adjusting the tabulator setting finger.

The finger should be centred in relation to the stop and should set the one which is in the centre of the clearing bridge (see figure 101).

Adjust by bending the finger itself.

P3	V	82	Tabulator stop
P3	V	83	Tabulator stop spring

63 40 5	Spring for P3 V 74.



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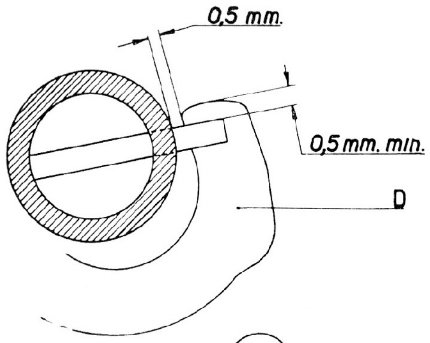

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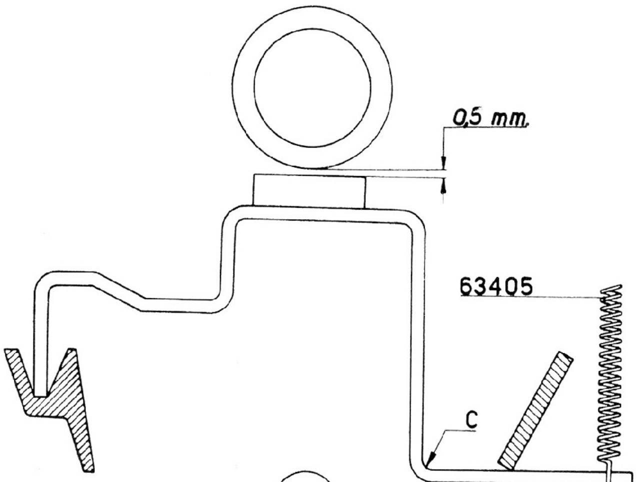


105

88 - FIGURE 106

Assembling the carriage lock.

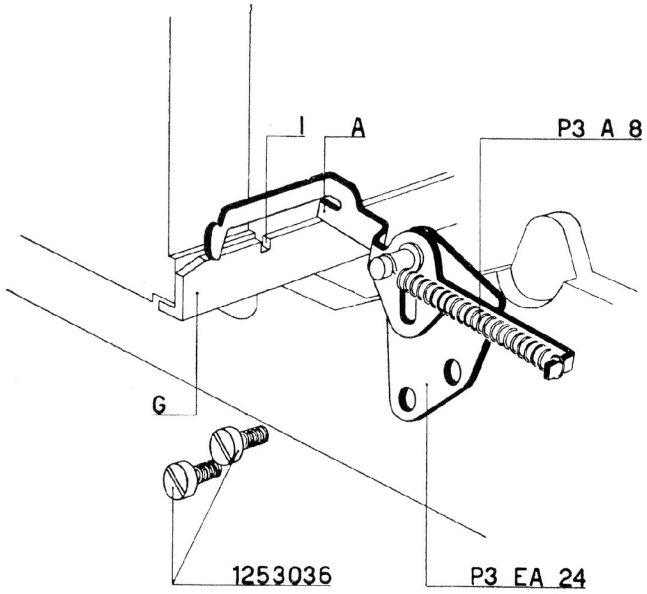
a) Hook the spring P3 A 8 between the lever and the carriage lock lever P3 EA 24.

b) Place the P3 EA 24 on the L. H. side of the machine frame with two screws 1253036 which should only be partially tightened.

Adjustment of the position of the carriage lock lever.

c) Rest the lock lever on the guide rail **G**, and check that the tongue **A** is inserted in the slot **I** when the carriage return lever is operated or the carriage is made to advance.

P3 A 8	Carriage lock spring
P3 EA 24	Carriage lock lever
125 30 36	Special screw for P3 EA 24



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89 - FIGURE 107

Assembling the outer casing.

a) Remove the iron feet and the rear brackets.

b) Move the carriage completely to the left and place the casing in position, securing it as shown in the figure.

c) Place the front casing in position.

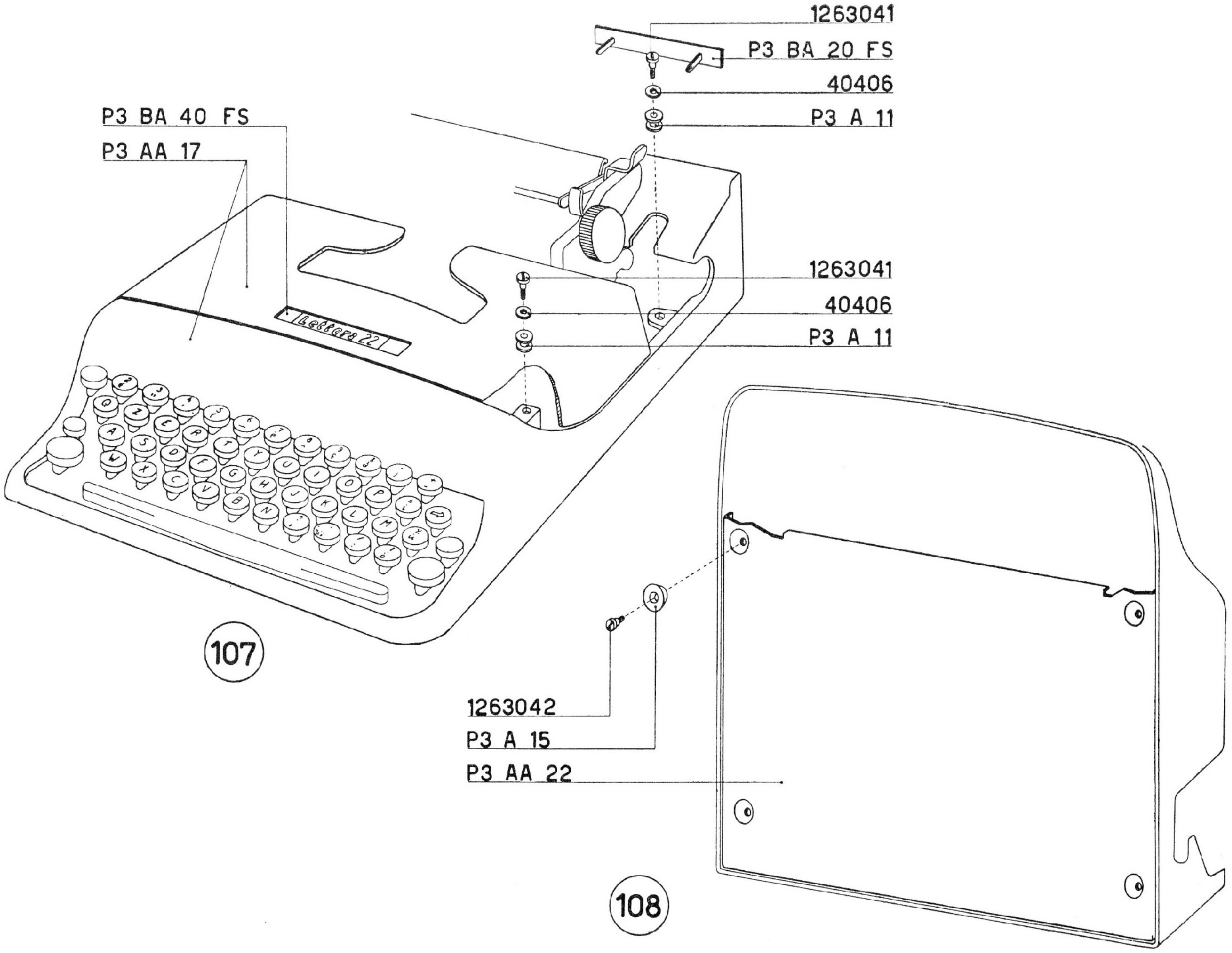
P3	A	11	Outer casing rubber bush
P3	A	15	Rubber foot
P3	AA	17	Complete outer casing
P3	BA	20 F. S.	Rear name plate
P3	AA	22	Base frame plate

90 - FIGURE 108

Assembling the base frame plate and rubber feet.

Place the plate in position on the bottom of the machine. Assemble the rubber feet as shown in the figure.

P3 BA 40 F. S.	Front name plate
126 30 41	Shoulder screw for outer casing
126 30 42	Shoulder screw for rubber feet and base plate
40 40 6	Washer for 126 30 41


1263041
P3 BA 20 FS
40406
P3 A 11
P3 BA 40 FS
P3 AA 17
Lettera 22
1263041
40406
P3 A 11
1263042
P3 A 15
P3 AA 22

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108

Instructions for Assembling and Adjusting the L 22

The model L 22 is not provided with a tabulator.

a) Therefore the following parts should not be mounted:

— P3 V 1	Tabulator key lever	see paragraph 1 « LL 22 » assembly
P3 V 4	Tabulator key top	
61 40 7/P	Spring for tabulator lever	
— P3 V 30	Tabulator setting and clearing operating bracket	see paragraph 31 « LL 22 » assembly
P3 V 136	Tabulator setting lever	
P3 EV 12	Tabulator frame assembly	
P3 GV 141	Tabulator clearing	
62 30 11	Spring for P3 GV 141	
— P3 EV 124	Tabulator support bracket with finger	see paragraph 33 « LL 22 » assembly
61 25 2	Spring for P3 EV 124	
125 30 36	Special screw for clamping P3 EV 124	
— P3 V 6	Tabulator operating lever	see paragraph 34 « LL 22 » assembly
N3 R 20	Spring for P3 V 6	
— P3 V 8	Tabulator frame connecting link	see paragraph 35 « LL 22 » assembly
— P3 DV 74	Tabulator brake	see paragraph 41 « LL 22 » assembly
63 40 5	Spring for P3 DV 74	
— P3 V 3	Tabulator operating link	see paragraph 68 « LL 22 » assembly

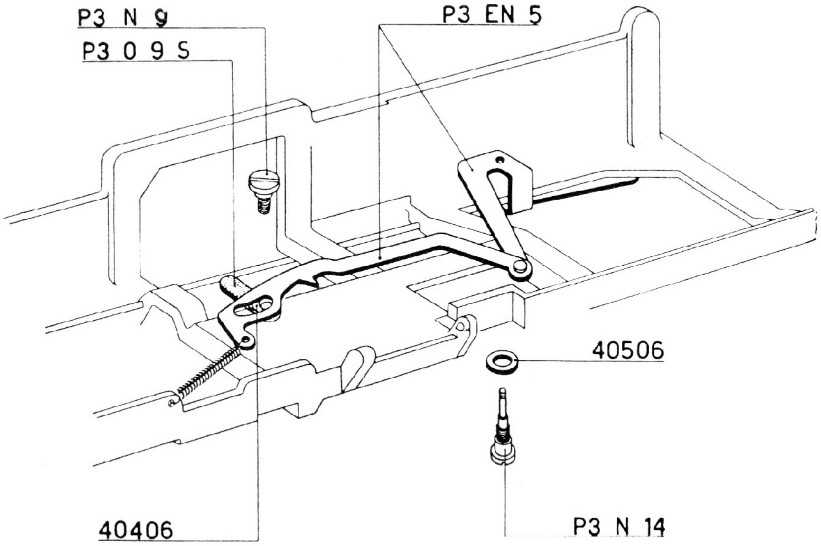
b) The washer 40 50 6 is assembled to compensate for the thickness of the tabulator operating lever P3 V 6 (figure 109).

c) To compensate for the tickness of the loose dog release link of the tabulator frame P3 EV 12; the washer 40406 (fig. 109) with the draw band deflecting plate P3 O 9 S underneath is assembled under the back space lever, screwed by the shoulder screw P3 N 9.

d) Instead of the slide carriage P3 CR 1, the P3 CR 1 S should be used. The rear rail tube of the latter is not provided with tabulator stops.

e) The shift lock plate with tabulator setting and clearing lever P3 EG 17 should be replaced by the P3 G 17 which is not provided with this lever.

P3 N 9	Large headed collet screw for back space
P3 N 14	Double collet screw for back space and tabulator control square
P3 EN 5	Square with pawl for back space control
P3 O 9 S	Deflecting guide for pull carriage wire
40 40 6	Washer
40 50 6	Washer



(109)

Testing the machine.

By testing we mean the whole series of operations which should be carried out in order to ensure that the machine fulfills all the functions for which it was designed.

The mechanic is only necessary when, during the testing, some device does not function correctly.

The special forms which enable a complete check of all the functions to be made within about 13 minutes, may profitably be used in the testing.

Using these forms, the following operations should be carried out:

a) Remove the front cover from the machine; move the carriage from right to left and ensure that the parts of the machine are in good condition.

b) Test the ribbon on the machine;

c) Insert two sheets of this paper with carbon paper between, type a few lines and ensure that the type does not cut the paper and the printing is even. Take out the sheets and check that they are not wrinkled.

d) Repeat the test with five sheets of thin paper and thin carbon paper and check that the last copy is readable and not blurred.

e) Repeat test *c*) with regard to the type cutting the surface, even printing with a card.

f) Bring the colour change lever to stencil and depress the space bar. Holding it down strike all the keys and ensure that each type bar is completely free. Put the colour change lever back on black.

g) Insert the test sheet, checking the alignment with one of the printed lines. Type the relevant data of the machine, taking it from the machine itself and then carry out the following test:

1) Impression and alignment: set the shift on capitals and strike all the keys lightly, alternating the different characters with the letter H. Ensure that all the characters have an even and clear impression and that they are all perfectly aligned with the letter H.

2) Set the shift on small letters and repeat the test, ensuring that the same conditions prevail.

3) Shift motion: strike a series of letter H, alternating from the small letters to the capitals and then continue with the letters m, k, x and l. The lower edges of all the letters should be perfectly aligned.

4) With the colour change lever on black, strike a series of characters which are the highest and the lowest; e.g. / _ ( ) % !. Ensure that the characters are entirely clear and that there is no red appearing at the bottom.

5) Repeat the typing of the same characters with the colour change lever on stencil and check that the ribbon remains stationary. After a few strokes the print signs disappear completely.

6) With the colour change lever on red, repeat the same typing and ensure that characters are clear and that there is no black appearing at the top.

7) Ribbon vibrator: when the colour change lever is moved from one position to another, the ribbon vibrator should remain still. Bring the colour change lever to stencil; strike a few keys and check that the ribbon vibrator does not move.

8) Trip: whilst observing the tests for the impression shift motion and the bicolour, one must check that the letters are equally distant, one from another. This shows that the trip mechanism is functioning correctly.

9) R. H. ribbon reverse: wind the ribbon on the L. H. spool, turning it by hand until the eyelet is near the R. H. reverse arm. Then type a series of characters and check that the reverse operates smoothly without the ribbon being pulled too taut.

10) L. H. ribbon reverse: carry out the same test for the other side of the ribbon reverse mechanism.

11) Line finder: type a series of letter i. Press the line finder up to the platen and check that the graduations are in line with the characters and that the base of the characters is flush with the upper edge of the line finder. Check that the line finder is parallel to the platen.

12) Back space: strike the i key and the space bar alternatively. Set the shift motion to capitals and strike an I after the last i. Operate the back space key three consecutive times and then strike another I; this should be printed between two small characters, repeat the test until all the capitals I characters are alternated with the small i characters.

13) Clutch: operate the clutch then move the platen so as to print on the line set apart on the form the purpose.

14) Zero position: bring the line space selector to the zero position and move the platen so as to print successively on the different lines designated on the form for the purpose.

15) Line spacing position: put the line spacing lever back in working position and turn the platen without using the clutch until it has been brought onto the line; the typing should be in the identical position in relation to the line as that previously carried out with the clutch.

16) Margins: strike two full stops in the place shown on the form for the L.H. and. R.H. margins. Set the two margin stops so as to correspond to the full stops and then type a line, making sure that the keyboard and spare bar lock at the R.H. margin, so that no letters are printed one on top of one another in the last space.

17) Paragraph indentation: depress the margin release key and return to the beginning of the line using the line space lever. The carriage should stop five spaces before the L.H. margin stop. Return to the beginning of the line and type a complete line between the two margins, until the lock operates.

18) Margin release return to the L.H. margin. Depress the margin release key and ensure that the carriage moves completely to the left.

Type a line. The carriage should pass the margin on the way back without difficulty. When the lock on the right margin is operated, depress the release key again. It should be possible to continue typing to the end of the platen.

19) Tabulator: strike four full stops in the position indicated on the form and set four tabulator stops to correspond with the full stops; type a series of figures or words in columns, moving the tabulator clear the stop at the points indicated on the form. After a complete series of tests have been carried out, move the carriage along its whole lenght, at the same time operating the clearing lever. Bring the carriage back to the beginning of the line and depress the tabulator key. The carriage should run freely for the whole of its lenght.

20) Write the results of the various tests listed here in the proper spaces.

21) Line spacing: Bring the line space selector to position I and set a margin stop at a suitable point. Strike a key _ and return to the beginning of the line. Repeat this operation a second time. Bring the line space selector to position 2. Strike the space bar two or three times and move the L.H. margin stop to the right until it stops. Strike the key _ again and come back to the end of the line using the line spacing lever. Carry out this operation several times. Continue with this test for the other line spacing positions.

22) Make the final typing test, typing the standard text printed on the test sheet.

Maintenance.

The Lettera 22 is already lubricated when it is shipped out by the Sales Organization. On account of its manufacturing and operating features, it can be used for a number of years without need of further lubrication.

It is advisable, therefore, not to use too much oil except in the case of a complete overhaul and cleaning of the machine. For good operation of the machine it is necessary at regular intervals:

— carefully to remove dust and eraser residues from the interior of the machine.

— to clean the type faces carefully, after putting a cloth under them. The cleaning is done with the brush for the purpose. If the machine is very dirty it may be advisable to use a little petrol, ensuring that no drops fall along the type bars.

— if it is absolutely necessary, lubricate the escapement pinion, the bearing surface of shoulder screws, the seats of the levers and links of the cinematics and the different flexible couplings. Use a thin oil.

— clean the key lever comb slots carefully with a dry brush. Do not lubricate them.

— polish the chrome plated parts with a soft dry cloth.

— clean the casing carefully, using the special polishing liquid. Do not use water.

Spare Parts Catalogue

The spare parts are distinguished by a code symbol under a name which enables quick and accurate identification. The use of the code symbol and possibly also the name is essential in orders of spare parts and notifications of mechanical defects etc.

The spare parts are divided into three categories; special parts, standard parts and assemblies.

Special parts.

These are single parts, which are only applicable to one model. Their code symbols are composed of the following elements:

a) A key letter (or group of letters or numbers) which indicates the model for which the part is intended. (e.g. P3 = Lettera 22).

b) A base letter (or group of letters) which indicates the mechanism with which the part is associated. (e. g. P3 G = Shift mechanism).

c) The number which the part has with regard to the particular mechanism (e.g. P3 G 17 Shift lock plate).

Standard parts.

These are single parts and serve for connection, securing etc. These parts can be assembled on different parts, mechanisms and machines, therefore their symbols do not contain key or base letters but are made up of the following groups of figures:

1st group: defines the type and is formed of two or three numbers. When there are three numbers it signifies that the part has metric thread. The first of the three numbers is always 1 (e.g. 40... Washer; 120... Metric thread cheese head screw).

2nd group: measures the principal diameter in tenth of a millimeter and is formed of two figures (e.g. 120 35... Metric thread cheese head screw of 3.5 mm. outside diameter).

3rd group: serves to indicate the type of standard part i.e. when there is more than one kind with a certain principal dimension e.g. varying lengths of a screw. It is formed of the remaining numbers in the symbol. (e. g. 120 35 2... Metric thread cheese head screw, 3.5 mm. diameter, type 2).

Assemblies.

If the base letter of a part is prefixed by the letters **E - G - H**, this indicates a sub-assembly. This consists of a group of a number of special or standard parts assembled together.

e.g. P3 GG 6 - Shift shaft assembly.

If however the base letter is prefixed by the letters **A - B - C - D** it indicates that it is a complete assembly, which may comprise special standard and sub-assembly parts. e.g. P3 CR 1 - Carriage slide front rail and tabulator tube assembly.

FINDING THE PART SYMBOLS.

On the illustrations.

This is done by comparing the piece with the drawing of it which will be found among the figures in the illustrations for Assembly and Adjustment (page 60 and following). In these figures, the code symbol is given at the side of each part. For convenience and quickness when consulting the figures, a list of all the symbols with the name of the appropriate mechanism is shown below.

In the catalogue.

To facilitate the checking of orders for spare parts a catalogue is given on page 196 and the pages following which lists all the special parts, standard parts and assemblies which go to make up the «Lettera 22».

To facilitate storage in the workshop, a short line is printed before each symbol on which the number of the box in which the item is kept may be written with a pencil.

At the side of each spare part is indicated the number of the page (or pages) where the part is shown in the assembly instructions.

The parts have been listed in the following order:

1) *Special parts and assemblies distinguished with key letter P3* (Lettera 22), grouped according to the base letter.

A = Frame, Outer casing
B = Key levers, Type bar action, Touch tuning
E = Type bar segment, Universal bar frame
G = Shift mechanism
H = Spacing mechanism
I = Escapement assembly, Carriage rack
L = Ribbon mechanism.
N = Back spacer
O = Main spring
P = Runway casting
Q = Margin release, Key trip device, Key lever stop bell
R = Slide carriage, Paper feed, Paper bail, Paper guide
S = Carriage release
T = Margin rack and stops.
U = Platen, Clutch, Platen knobs, Line spacing
V = Tabulator.

2) *Special parts and assemblies distinguished by different key letters*. Naturally these parts may also be found in the catalogues of the machines for which they were originally intended.

M2 = L. 80 **N3** = MC 14

3) *Standard parts* grouped according to type. The numerical order of the symbols, when the first group is composed of three figures (metric thread) is without regard for the first, which, as we have seen is always 1.

e. g.:— **1 39** round nuts
40 washers
1 42 collars
44 split washers.

A — FRAME, COVER

________	**P3**	**A**	**1**	Left side of the frame, pages 78, 80
________	**P3**	**A**	**2**	Right frame side, page 80
________	**P3**	**A**	**5**	Keys and first movement lever bracket, pages 62, 74, 76, 78, 82, 170
________	**P3**	**A**	**8**	Spring for P3 EA 24, page 178
________	**P3**	**A**	**10**	Lever stop leather, pages 76, 174
________	**P3**	**A**	**11**	Bushing for attaching cover, page 180
________	**P3**	**A**	**15**	Foot, page 180
________	**P3**	**A**	**19**	Spring for closing movable cover of cowling, page 76
________	**P3**	**A**	**109**	Leather stop and key lever spring holder, page 76
________	**P3**	**AA**	**17**	Complete cover, page 180
________	**P3**	**BA**	**20 FS**	Rear name plate, page 180
________	**P3**	**AA**	**22**	Base of the cowling, page 180
________	**P3**	**EA**	**24**	Carriage lock lever, page 178
________	**P3**	**BA**	**40 FS**	Front name plate, page 180

B — CINEMATIC, KEYBOARD LEVERS, FIRST AND SECOND MOVEMENT, TOUCH CONTROL

________	**P3**	**B**	**22**	Key lever link, pages 60, 74
________	**P3**	**B**	**23/1÷43**	First movement levers, pages 60, 74, 84
________	**P3**	**B**	**24/1÷4**	First movement lever link, pages 60, 84, 90, 94
________	**P3**	**B**	**26**	Second movement lever, pages 60, 90
________	**P3**	**B**	**27/1÷3**	Second movement lever, pull rod, pages 60, 90
________	**P3**	**B**	**28**	Pivot wire for key levers, page 62
________	**P3**	**B**	**29**	Pivot wire for second movement levers, page 90
________	**P3**	**B**	**30**	Touch control lever, page 78
________	**P3**	**B**	**33**	Pivot wire for first movement levers, page 74
________	**P3**	**B**	**101**	Lever for keys 12, 16, 20, 24, 28, 32, pages 60, 64, 76
________	**P3**	**B**	**102**	Lever for keys 8, 36, pages 60, 64, 76
________	**P3**	**B**	**103**	Lever for keys 4, 40, pages 60, 64, 76
________	**P3**	**B**	**104**	Lever for keys 14, 18, 22, 26, 30, pages 60, 66, 76
________	**P3**	**B**	**105**	Lever for keys 6, 34, 38, pages 60, 66, 76
________	**P3**	**B**	**106**	Lever for keys 2, 42, pages 60, 66, 76
________	**P3**	**B**	**107**	Lever for key 10, pages 60, 66, 76
________	**P3**	**B**	**108**	Lever for keys 17, 29, pages 60, 68, 76
________	**P3**	**B**	**109**	Lever for keys 21, 25, pages 60, 68, 76
________	**P3**	**B**	**110**	Lever for key 13, pages 60, 68, 76
________	**P3**	**B**	**111**	Lever for key 9, pages 60, 68, 76
________	**P3**	**B**	**112**	Lever for keys 5, 37, pages 60, 68, 76
________	**P3**	**B**	**113**	Lever for keys 1, 41, pages 60, 68, 76
________	**P3**	**B**	**114**	Lever for key 33, pages 60, 68, 76

———	**P3**	**B**	**115**	Lever for keys 19, 23, pages 60, 70, 76
———	**P3**	**B**	**116**	Lever for keys 15, 27, pages 60, 70, 76
———	**P3**	**B**	**117**	Lever for key 11, pages 60, 70, 76
———	**P3**	**B**	**118**	Lever for key 31, pages 60, 70, 76
———	**P3**	**B**	**119**	Lever for keys 7, 35, pages 60, 70, 76
———	**P3**	**B**	**120**	Lever for key 39, pages 60, 70, 76
———	**P3**	**B**	**121**	Lever for keys 3, 43, pages 60, 70, 76
———	**P3**	**GB**	**31**	Crank for touch control spring, pages 78, 102

E — SEGMENT PLATE, UNIVERSAL FRAME

———	**P3**	**E**	**1**	Segment plate, page 86
———	**P3**	**E**	**2**	Pivot pin for hammers, page 86
———	**P3**	**E**	**3**	Hammer, pages 60, 86
———	**P3**	**E**	**5**	Hammer bearing, page 86
———	**P3**	**E**	**8**	Left pivot wire holding plate, page 92
———	**P3**	**E**	**9**	Right pivot wire holding plate, page 92
———	**P3**	**E**	**12**	Type guide, page 86
———	**P3**	**E**	**13**	Hammer stop plate, page 86
———	**P3**	**E**	**14**	Adjustable regulator for P3 G 7, P3 G 8, page 94, 154
———	**P3**	**E**	**120**	Universal frame, pages, 86 156, 162
———	**P3**	**AE**	**1**	Complete hammers and type segment plate, page 86
———	**P3**	**GE**	**6**	Left segment plate support arm, page 86
———	**P3**	**GE**	**7**	Right segment plate support arm, page 86

G — SHIFT

———	**P3**	**G**	**7**	Left ball guide plate, pages 80, 88, 154
———	**P3**	**G**	**8**	Right ball guide plate, pages 80, 88, 94, 154
———	**P3**	**G**	**10**	Flexible coupling spring of shift, pages 84, 158
———	**P3**	**G**	**11**	Lower shift stop (left side), page 80, 156
———	**P3**	**G**	**12**	Upper shift stop, pages 80, 156, 158
———	**P3**	**G**	**15**	Shift lock spring, page 62
———	**P3**	**G**	**17**	Shift lock fixed tooth, page 184 (only for L 22)
———	**P3**	**G**	**20**	Left segment plate suspension spring, page 148
———	**P3**	**G**	**22**	Right segment plate suspension spring, page 148
———	**P3**	**G**	**24**	Release crank for flexible coupling, page 84
———	**P3**	**GG**	**6**	Shift shaft with crank, pages 84, 88, 154
———	**P3**	**EG**	**17**	Shift lock fixed tooth with setting and cancelling lever, pages 152, 158
———	**P3**	**GG**	**103**	Shift frame, pages 62, 76

H — SPACER

________	P3	H	3	Spacer lever stem, pages 74, 152
________	P3	H	11	Spacer link, pages 152, 156, 162
________	P3	GH	1	Spacer key, page 62
________	P3	GH	102	Spacer frame, pages 62, 74, 76

I — ESCAPEMENT, RACK

________	P3	I	3	Escapement wheel pin, page 118
________	P3	I	5	Rack, page 128
________	P3	I	7	Movable tooth silencer finger, page 118
________	P3	I	8	Spring for silencer finger, page 118
________	P3	I	12	Regulator, pages 80, 88, 94, 154
________	P3	I	14	Fixed tooth position regulator, pages 118, 120, 162
________	P3	I	16	Rocker plate return spring, page 120
________	P3	I	18	Friction washer for silencer finger, page 118
________	P3	I	110	Escapement rocker plate, pages 120, 152, 156, 162
________	P3	GI	6	Escapement pinion wheel, pages 118, 120
________	P3	GI	11	Escapement movable tooth, page 120

L — RIBBON ADVANCE AND REVERSE, TWO COLOUR, RIBBON LIFT

________	P3	L	1	Ribbon operation control lug pages 102, 166
________	P3	L	2	Ribbon advance control pull rod, pages 98, 102
________	P3	L	8	Horizontal ribbon advance shaft, pages 98, 100, 104, 106
________	P3	L	14	Lug return spring, page 102
________	P3	L	19	Spool clamping button, page 96
________	P3	L	25	Left reverse control lug, page 96
________	P3	L	27	Lug connecting pull rod, page 98
________	P3	L	31	Circular cam for reverse trip, pages 98, 100, 106
________	P3	L	33	Left ribbon advance pinion, pages 98, 100, 104, 106
________	P3	L	40	Two colour trip roller, page 146
________	P3	L	45	Trip roller carrying leaf spring, page 146
________	P3	L	46	Ribbon lift control pull rod, pages 148, 150
________	P3	L	48	Two colour control link, page 152
________	P3	L	63	Spool braking spring, page 96
________	P3	EL	3	Advance crank with pawl, pages 98, 100, 102, 104, 106, 148, 150.
________	P3	GL	6	Complete right pinion, pages 98, 100, 104, 106.
________	P3	GL	11	Ribbon advance toothed wheel, pages 96, 100

________	P3 EL 12	Spool shaft, page 96
________	P3 EL 15	Left spool shaft bracket, page 96
________	P3 EL 16	Right spool shaft bracket, page 96
________	P3 EL 29	Right reverse control lug with pawl, page 96
________	P3 GL 51	Ribbon lift with bracket, page 146
________	P3 EL 59	Two colour change over lever with braket, pages 78, 152

N — BACK SPACE

________	P3 N 2	Back space control link, page 152
________	P3 N 9	Large headed collet screw for back space, pages 116, 184
________	P3 N 14	Double collet screw for back space and tabulator control square, pages 116, 184
________	P3 N 101	Back space lever, pages 62, 72, 76, 152
________	P3 EN 5	Square with pawl for back space control, pages 116, 152, 184
________	P3 GN 12	Key for back space lever, page 62

O — MAIN SPRING

________	P3 O 1	Pin for pull carriage spring box, page 108
________	P3 O 2	Pull carriage spring box, page 108
________	P3 O 3	Cover of pull carriage spring box, page 108
________	P3 O 4	Pull carriage spring, page 108
________	P3 O 5	Pull carriage wire, page 108
________	P3 O 9 S	Deflecting guide for pull carriage wire, (only for L 22) page 184
________	P3 CO 2	Complete pull carriage spring box, page 108

P — FIXED GUIDE

________	P3 P 1	Carriage fixed guide, pages 108, 112
________	P3 P 6	Upper lateral stem, page 108
________	P3 P 11	Gratuated indicator, page146
________	P3 P 12	Carriage holding plate, pages 108, 110
________	P3 EP 5	Complete upper centre bearing, page 108
________	P3 GP 9	Complete right lower eccentric roller, page 108
________	P3 GP 10	Complete left central and lower rollers, page 108
________	P3 EP 13	Complete front bearing, pages 108, 110

Q — LEVER STOP, MARGIN RELEASE, BELL

________	P3 Q 1	Margin release frame, pages 146, 168, 172
________	P3 Q 2	Margin set control device gear, pages 112, 146, 152, 172

———	**P3**	**Q**	**3**	Horizontal rod of margin set device, page 152
———	**P3**	**Q**	**5**	Vertical rod of margin set device, pages 146, 172
———	**P3**	**Q**	**6**	Left bracket of release frame, pages 108, 146, 168, 172
———	**P3**	**Q**	**7**	Right bracket of release frame, pages 122, 146, 168, 172
———	**P3**	**Q**	**8**	Transmission frame for key levers lock, pages 170, 172
———	**P3**	**Q**	**9**	Rocker locking link, pages 170, 172
———	**P3**	**Q**	**10**	Lever stop comb, page 170
———	**P3**	**Q**	**11**	Margin release key, page 62
———	**P3**	**Q**	**12**	Link guide, pages 120, 170, 172
———	**P3**	**Q**	**22**	Bell clapper, page 122
———	**P3**	**Q**	**35**	Tapper support for release frame, pages 108, 122, 146, 168
———	**P3**	**Q**	**104**	Margin release levers, pages 62, 72, 76, 152

R — CARRIAGE MOVABLE GUIDE, UPPER AND LOWER PAPER HOLDER

———	**P3**	**R**	**5**	Lower paper holder return spring, page 126
———	**P3**	**R**	**7**	Front lever of lower paper holders, page 126
———	**P3**	**R**	**8**	Rear lever of lower paper holders, page 126
———	**P3**	**R**	**15**	Regulator, pages 120, 126, 156, 162
———	**P3**	**R**	**25**	Left paper support bar, page 130
———	**P3**	**R**	**26**	Right paper support bar, page 130
———	**P3**	**R**	**27**	Special nut for paper support bar, page 130
———	**P3**	**R**	**28**	Upper paper holder shaft, page 130
———	**P3**	**R**	**29**	Spring for upper paper holder, page 130
———	**P3**	**R**	**33**	Spring for paper support bar, page 130
———	**P3**	**R**	**34**	Upper paper holder roller, page 130
———	**P3**	**R**	**49**	Ring for upper paper holder roller, page 130
———	**P3**	**R**	**124**	Paper control plate, page 136
———	**P3**	**CR**	**1**	Sides with rail and tabulator tube, page 124
———	**P3**	**CR**	**1 S**	Sides with rail and tube, page 184 (only for L 22)
———	**P3**	**GR**	**9**	Front paper holder shaft with rollers, pages 126, 136
———	**P3**	**GR**	**10**	Rear paper holder shaft with rollers, page 126
———	**P3**	**GR**	**16**	Complete lower paper holder control shaft, pages 126, 136
———	**P3**	**CR**	**23**	Paper guide plate, pages 136, 142
———	**P3**	**GR**	**32**	Complete upper paper holder frame, page 130
———	**P3**	**CR**	**124**	Paper control frame with graduated frame, pages 130, 136

S — CARRIAGE RELEASE

________	P3	S	3	Left carriage release lever, page 126
________	P3	S	4	Right carriage release lever, page 126
________	P3	S	8	Carriage release control L bracket, pages 126, 128, 132
________	P3	S	9	Leaf spring, page 128

T — MARGIN SETTER

________	P3	T	1	Margin setter rack, pages 132, 134
________	P3	T	2	Left margin setter, page 132
________	P3	T	3	Right margin setter, page 132
________	P3	T	4	Margin setter leaf spring, page 132
________	P3	T	5	Graduated bar, page 136

U — PLATEN CLUTCH - LINE SPACING - KNOB

________	P3	U	1	Platen (rubber part)
________	P3	U	5	Clutch shaft, page 140
________	P3	U	16	Line spacing wheel, page 140
________	P3	U	18	Clutch disk, page 140
________	P3	U	24	Clutch control piston, page 140
________	P3	U	25	Spring for clutch control piston, page 140
________	P3	U	30	Spring washer for line spacing lever, page 124
________	P3	U	31	Line spacing lever, page 124
________	P3	U	34	Line spacing control pull rod, page 124
________	P3	U	41	Pawl stop, pages 124, 144
________	P3	U	44	Line spacing trip roller return spring, page 124
________	P3	U	53	Graduated sector, pages 124, 144
________	P3	U	54	Graduated sector clamp screw, pages 124, 144
________	P3	U	58	Line spacing lever return spring, page 124
________	P3	U	62	Collet screw for line space lever, page 124
________	P3	GU	1	Complete platen, page 142
________	P3	CU	5	Complete knob with clutch, page 140
________	P3	GU	8	Left knob, page 140
________	P3	GU	9	Right knob with shaft, page 142
________	P3	GU	22	Clutch control button with bushing, page 140
________	P3	EU	38	Line spacing crank with pawl, page 124
________	P3	EU	42	Lever with roller and pin, pages 124, 144
________	P3	EU	49	Line spacing cam, page 124
________	P3	GU	61	Line spacer lever bracket with pin, page 124

V — TABULATOR

________	P3	V	1	Tabulator lever, pages 62, 72, 76, 152, 174
________	P3	V	2	Setting and cancelling control link, page 152

________	138 30 5	Hexagonal nut, pages 62, 78, 80, 84, 88, 94, 108, 118, 120, 122, 126, 154, 156, 162, 168
________	138 40 7	Hexagonal nut, page 108
________	138 60 1	Hexagonal nut, page 142
________	40 31 2	Washer, pages 86, 96, 118
________	40 40 6	Washer, pages 108, 180, 184
________	40 50 6	Washer, page 184
________	49 31 6	Ball, page 88

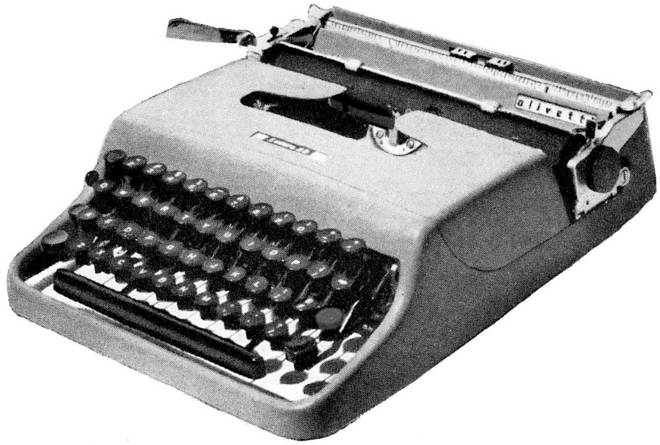
________	60 20 11	Spring, pages 96, 120
________	60 30 1	Spring, pages 86, 122, 146
________	61 25 2	Spring, page 114
________	61 40 1/P	Spring, page 76
________	61 40 7/P	Spring, page 76
________	62 30 11	Spring, pages 112, 128, 132, 172
________	63 40 5	Spring, pages 122, 176

Olivetti is Europe's largest manufacturer of office machinery, with factories in Italy, Spain, Scotland, Argentina and South Africa. The Olivetti Corporation of America is at 580 Fifth Avenue, New York.

olivetti

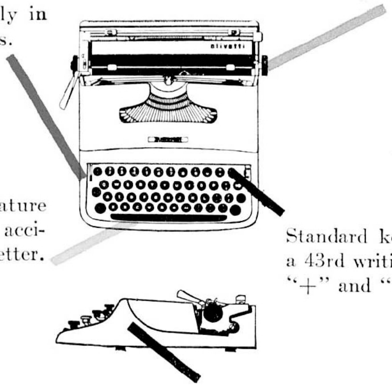
Lettera 22

The Olivetti "Lettera 22" Portable Typewriter



The "Lettera 22" combines true *portability* with all important big-typewriter features. It offers automatic keyboard-set tabulator, basket shift, right and left carriage release, standard-size ribbon spools, automatic one-space ribbon reverse, touch regulator and many other advantages—yet is only 3⅝ inches high and weighs just 9 pounds. The die-cast aluminum case is designed by Marcello Nizzoli of Milan, and has been featured in many good-design exhibits.

Experienced travellers call it "the portable *portable"—yet the "Lettera 22's" big-typewriter features and girder-sturdy chassis make it a favorite of professional writers as well as students and businessmen. Carried in its handsome two-tone reinforced case, or tucked away in a suitcase, it's a good companion on train, plane, ship or motorcar.*



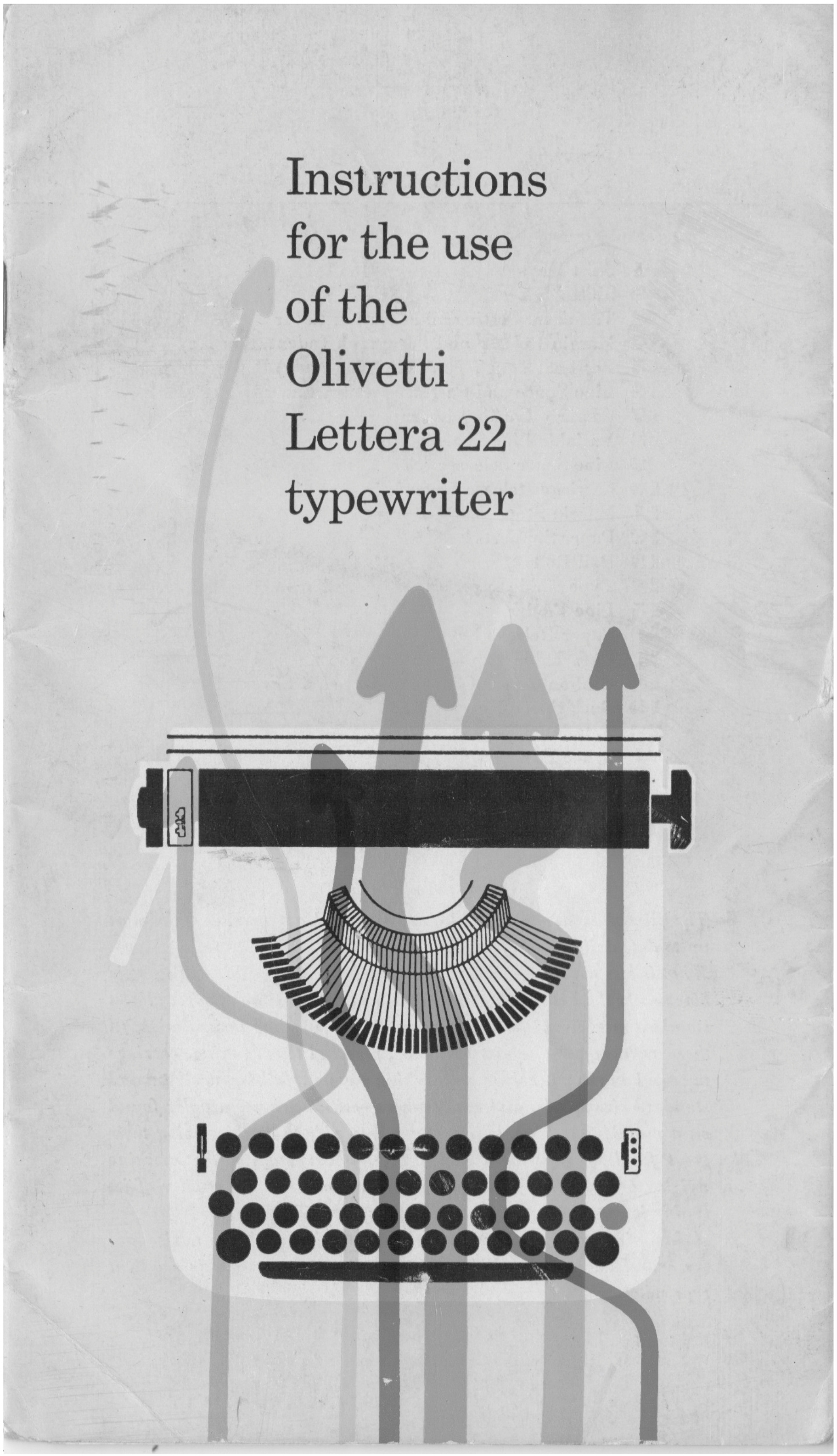
Half-Line Spacing allows additions to be typed between single-spaced lines.

Automatic paragraph indentation is another feature found only in Olivetti typewriters.

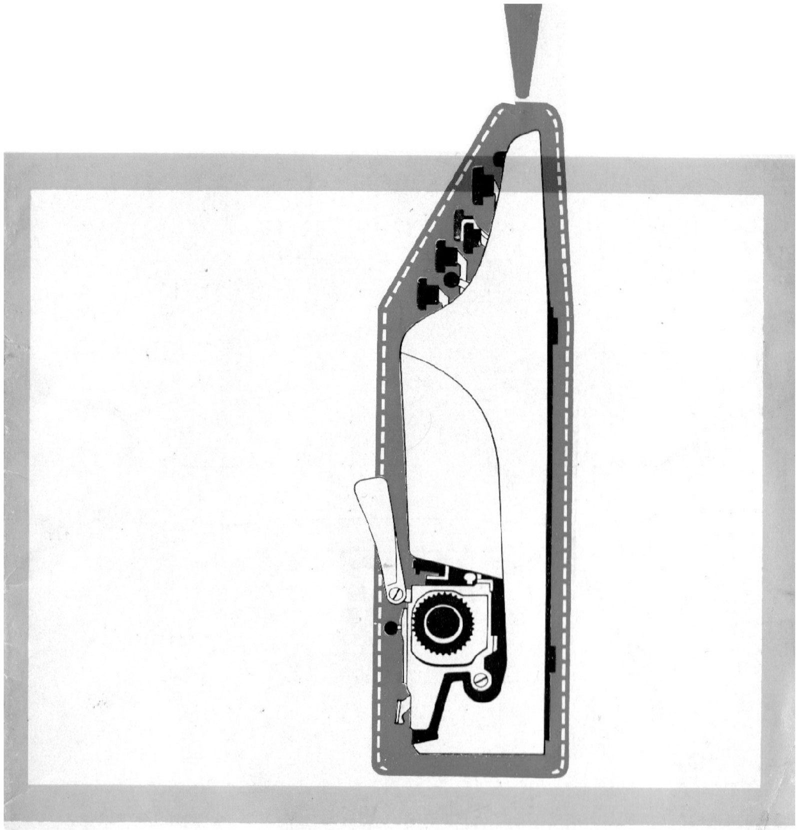
Correcto-space feature permits insertion of accidentally omitted letter.

Standard keyboard has a 43rd writing key with "+" and "=" signs.

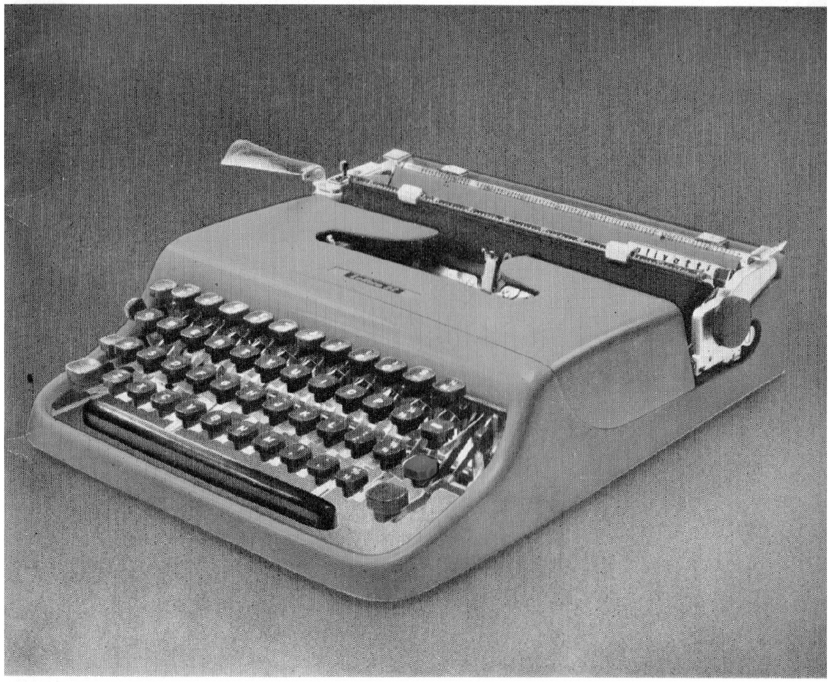
The "Lettera 22" is just 3⅝ inches high, weighs only 9 pounds.



# Instructions
for the use
of the
Olivetti
Lettera 22
typewriter



Instructions
for the use
of the
Olivetti Lettera 22
typewriter



To prepare the machine for use

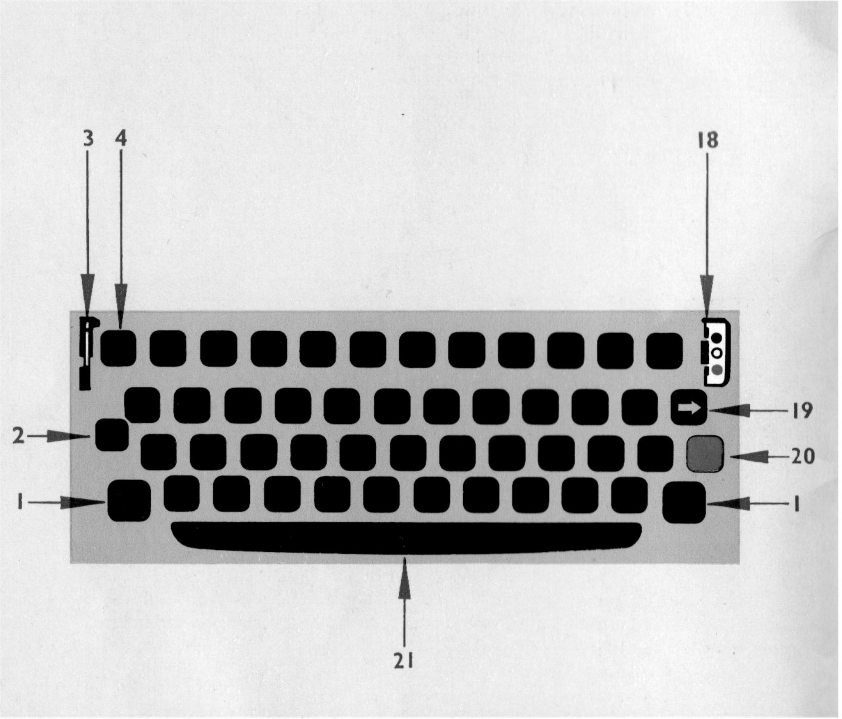
After removing all the cardboard and paper packing, these simple preliminaries should be followed:

a) Make sure that the *carriage locking lever* **7** is unlocked.
b) Move the *carriage return and line space lever* **6** into its working position.
c) Make sure that the *ribbon colour change lever* **18** is in the blue (or red) position.
d) The *line space selector* **9** must be in one of the slots 1, 2 or 3.
e) Make sure that *margin stops* **11** are at opposite ends of the carriage.

How to insert the paper

To insert paper, lift the *bail rod* **13** and slide the paper behind the platen (roller), turning the platen until the paper emerges at the front. If the paper needs to be straightened, pull *paper release lever* **16** forward, adjust the paper and push back lever **16**. The machine is now ready for use.

Keyboard



Shift Keys 1

To type capital letters, depress either of the two *shift keys* **1**.

Shift Lock 2

Depress this key whenever you want to type continuously in capitals.
To return to normal typing, depress either of the *shift keys* **1**.

Back Space Key 19

Depress this key to move the carriage back one space.

Margin Release and Paragraph Indentation Key 4

This key serves a double purpose:
a) It enables you to type outside the limits set by either of the *margin stops* **11**.

b) It gives automatic paragraph indentation. If kept pressed down while bringing the carriage back to the start of a new line, the carriage will stop about half an inch to the right of the set margin.

Space Bar 21

This moves the carriage one space forward to provide the space between words.

Horizontal Half Spacing

The Lettera 22 provides horizontal half spacing. When the space bar is pressed down the carriage moves a half space to the left; when it is released the carriage moves another half space. This action is most useful when making a correction to insert an omitted letter, or when it is necessary to insert a shorter word in place of a longer one:—
(*a*) Inserting an omitted letter:
it was a vey good idea
it was a very good idea
After erasing the error, position the carriage so that the printing point is directly over the blank space immediately preceding the word to be corrected. Then press the space bar and, while it is down, strike the letter desired. Release the space bar and repeat the process until the work is completed.
(*b*) Reducing the space:
They have a good idea
They had a good idea
Position the carriage to the space preceding the erased word, then space one full space followed by half a space thereafter using the same procedure as in example (*a*).

Ribbon Colour Change and Stencil Lever 18

With the lever set opposite the blue dot, typing takes place on the upper half of the ribbon; when set opposite the red dot, typing takes place on the lower half. For stencil cutting, the ribbon is put out of action by setting the lever opposite the white dot.

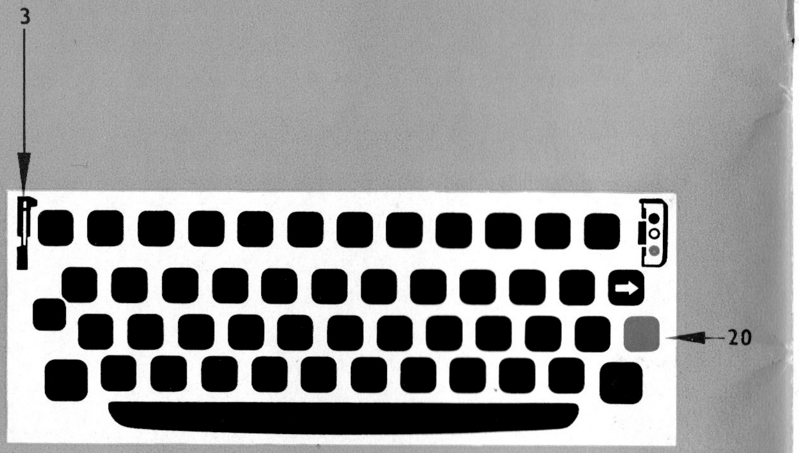
Tabulator Key 20

Tabulator Setting and Clearing Lever 3*

The tabulator makes it easy to type tables of words or figures in any arrangement of vertical columns, stopping the carriage automatically at the beginning of each column.

---

* *Applies only to Lettera models fitted with tabulator.*



Once the number and position of columns required are known, a stop must be set for each of them.

To set the stops

Move the carriage to the point at which the *type guide* **14** coincides with the beginning of the first column you require. Then pull the *tabulator setting lever* **3** forward. Next, move the carriage along to the place where the second column is required and set the second stop in the same way, and so with any further columns.

To tabulate

Once the stops have been set, and the carriage moved to the left margin, it is only necessary to depress the red *tabulator key* **20** to reach the beginning of the first column automatically. Type the appropriate words or figures, then depress the key again to arrive at the second column and so on.

Setting of tabulator stops

Surname	Christian Name	Town	Amount
↓	↓	↓	↓
Walker	David	London	1 12 6
Smith	John	Bristol	10 9
Hope	William	Cardiff	220 3 2
Stevens	Larry	Glasgow	10 9 7
Greene	Andrew	Bath	37 4 11
Cooper	Edward	Perth	9 0 0
Brown	Alfred	Brighton	2 13 0

In typing columns of numbers always set the stop for the largest number in your list and use the space bar to bring you to the right position in the column for any smaller number.
The example above shows how to use the tabulator. When it is desired to change the arrangement of the columns, or to eliminate them entirely, the stops must be cleared.

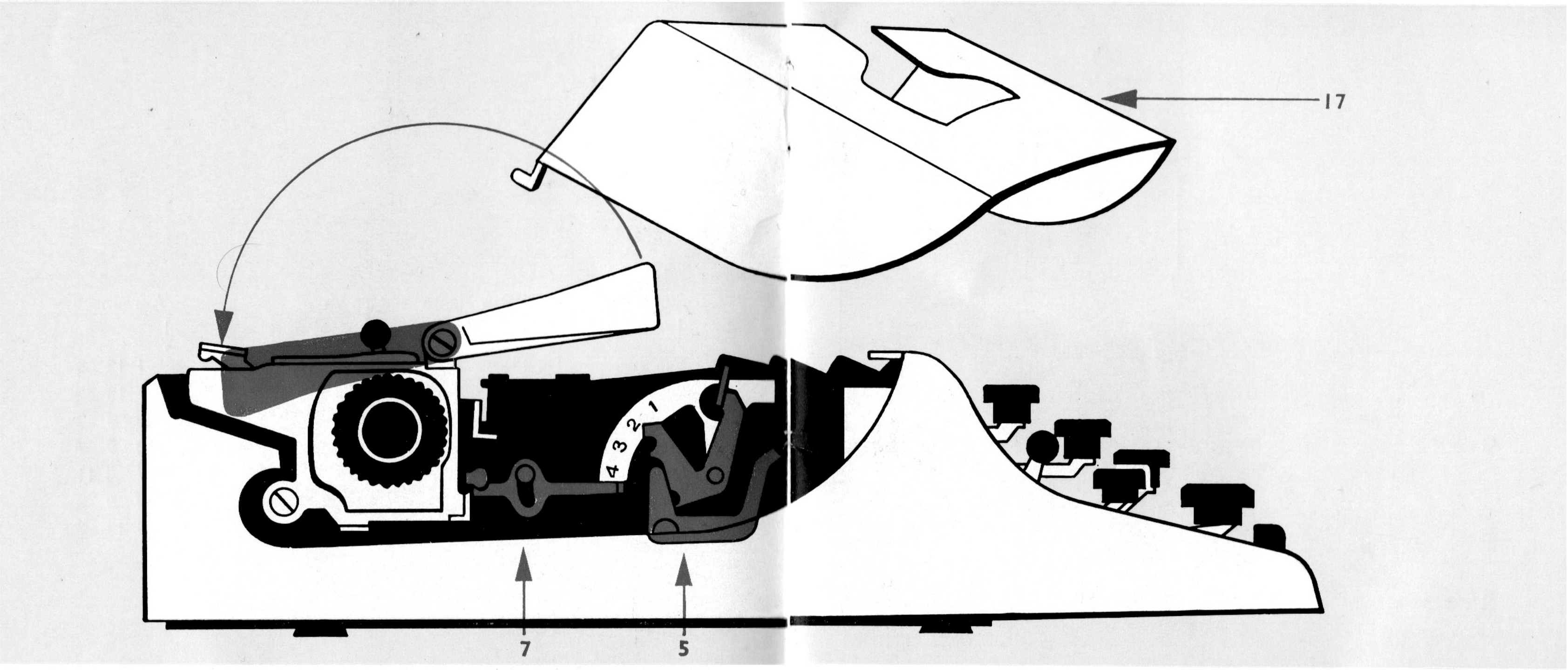
To clear a single stop

To clear a single stop, bring the carriage to that stop by depressing the *tabulator key* **20**, then push the *tabulator clearing lever* **3** backward.

To clear all the stops

To clear all the stops at once, keep the tabulator clearing lever pushed backward while moving the carriage its full length by depressing the tabulator key.

Carriage



Detachable Top Cover 17

To remove, hold the cover firmly at the centre and lift from the front. This gives access to the ribbon spools, to the type for cleaning purposes, and to the *touch tuning device* **5**.

Carriage Locking Lever 7

This lever locks the carriage in the central position and prevents it from moving whilst it is being carried. The carriage should be locked every time the typewriter is put into its case. Down to lock, up to unlock.

Line Space and Carriage Return Lever 6

The *carriage return lever* **6** must be hinged forward when using the machine and folded back when replacing it in the carrying case. When brought forward into the working position, it is used to take the carriage back to the beginning of the writing line; at the same time it moves the paper up ready for typing a new line, according to the setting of the line space selector.

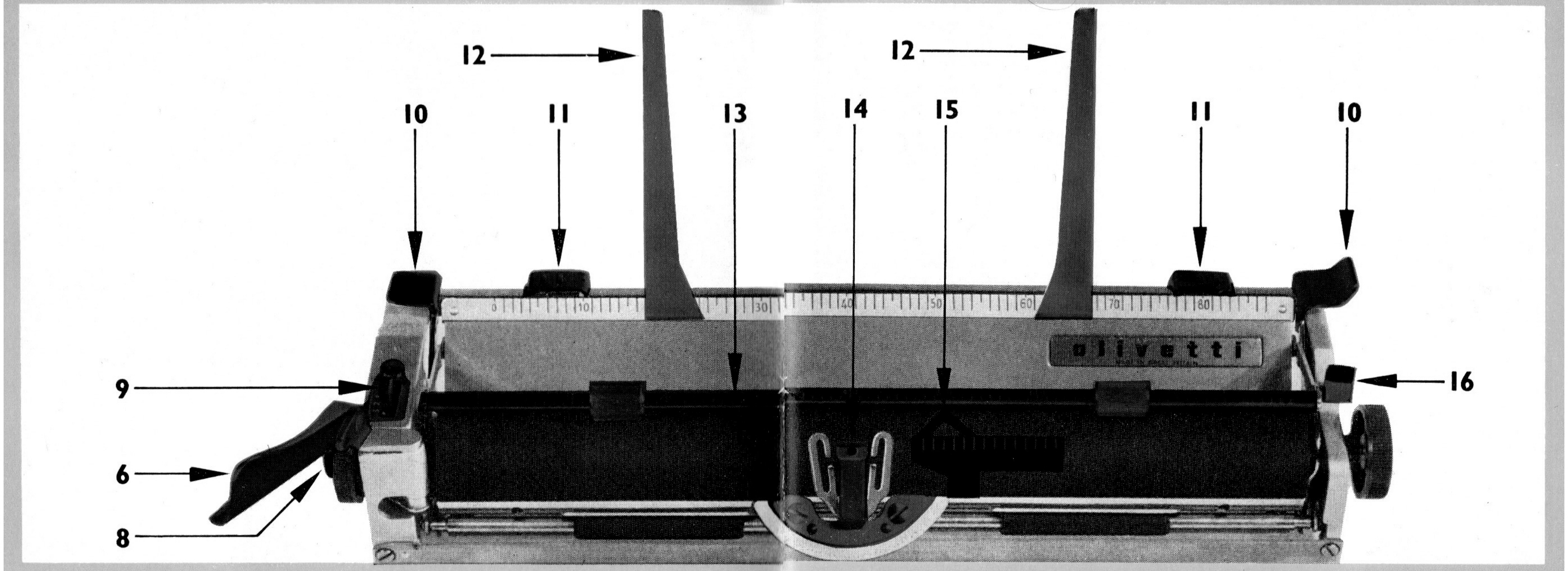
Variable Line Spacing Knob 8

The platen can also be disengaged from the spacing mechanism by pressing this knob. Use this in conjunction with the *line finder* **15** when you wish to start typing at a particular position on the paper, when typing on ruled forms, or to find the correct alignment when re-inserting into the machine a sheet that has already been typed.

Line Space Selector 9

The distance between consecutive lines of typing is determined by the *line space selector* **9**. This is set in position 1 for single spacing, in position 2 for intermediate spacing, and in position 3 for double spacing.

With the line space selector in position 0, the spacing mechanism is disengaged and the platen (roller) can be revolved freely by hand to any position. This is used when inserting corrections between lines, or for signs either above or below the writing line, for example: H_2SO_4, a^3+b^3, etc.



When using position 0 of *line space selector* **9** instead of *variable line spacing knob* **8** the platen will align itself automatically to the lines typed before, after the *line space selector* **9** has been returned from position 0 to the position 1, 2 or 3, as the case may be.

Personal Touch Tuning 5

This device enables the user to adjust the key tension to suit his or her touch. The lever will be found under the *detachable top cover* **17** on the left side. There are four positions, 1 the lightest, 4 the heaviest. The beginner is recommended to start with the tension set at 4. Later, as ease and lightness of touch and speed have been acquired, the adjustments can be brought into play one after the other until the lightest touch is in use at position 1. Experienced typists who have used heavier machines will find it better to follow this method too.

Carriage Release Levers 10

When either of these levers is pressed, the carriage moves freely to the left and may be brought to any desired position.

Bail Rod 13

This holds the paper firmly against the platen. It should be raised when inserting paper into the machine or when making an erasure.

Paper Release Lever 16

When pulled forward this lever loosens the paper under the platen. It is used for adjusting the paper to a vertical position and when inserting several sheets with carbon paper into the machine. The lever should always be in the locked position while typing.

Paper Supports 12

These are folded down when not in use and are raised to support the paper while typing.

Margin Stops 11

The two *margin stops* **11** can be moved quickly into the desired positions by pressing lightly on them and sliding them to left or right along the graduated scale. Each division on the scale corresponds to one typing space. Before setting margins, move the stops to left and right ends respectively. Next, move the carriage until the *type guide* **14** coincides with the point at which you want your left margin to be. Then move the left-hand stop to the right as far as it will go. Reverse the process to set right-hand stop. If you want to type beyond the margin stops in either direction, use the *margin release key* **4** as shown on page 4.

Line Finder 15

The top edge of the *line finder* **15** shows exactly the position of the typing line. Thus it serves as a guide when you are typing on lined paper, and when it is necessary to return to a line after the *variable line spacing knob* **8** has been used, or when the paper has been replaced after being taken out of the machine. The white marks coincide with the vertical centres of the individual letters.

Vertical or horizontal lines can be drawn by inserting a pencil point in one of the corners of the triangular guide, meanwhile revolving the platen for vertical lines, or moving the carriage sideways for horizontal lines.

Bell

The ringing of the bell is a warning that there are only a few more spaces before the end of the typing line.

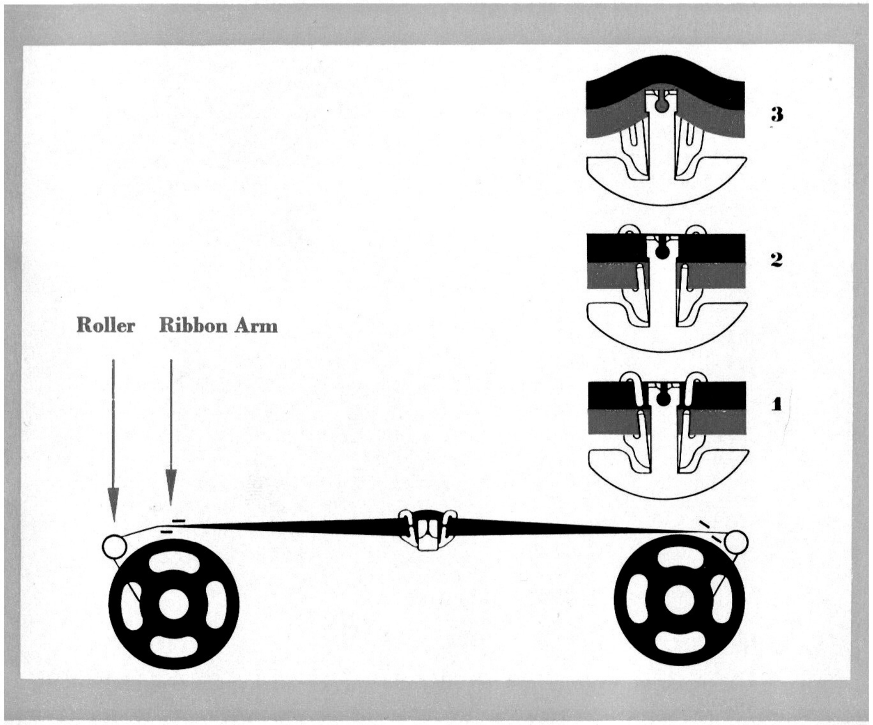
The Ribbon

The normal ribbon has two colours, the top half being blue or black and the bottom half red. To switch from one to the other, use the *ribbon colour lever* **18** as indicated on page 5. The machine uses a full length ribbon on standard machine size spools.

For best results always use an Olivetti ribbon. In an emergency any 1/2 inch wide ribbon can be used provided there is an eyelet at each end of the spool to activate the ribbon reverse.

Ribbon Reverse

The ribbon moves along automatically each time a key is depressed. When it reaches the end of one spool it reverses, also automatically. To wind the whole ribbon on to one of the spools, e.g., when about to change it, just rotate the appropriate spool with the finger. Before doing so, move the ribbon arm as far as it will go away from the roller towards the centre of the machine.



Changing the Ribbon

Having removed the top cover, wind the whole ribbon on to one spool. Then slide the ribbon out of the hooks of the ribbon vibrator (see 1, 2 and 3 above). Unscrew the two knurled nuts which hold the spools in place and take out the two spools. Hook the new ribbon to the empty spool and wind it until the metal eyelet — about 6″ from the end — is covered. Replace the spools on their shafts and make sure the two knurled nuts are replaced and tightened, as otherwise the ribbon will not move. Check that the red half of the ribbon is at the bottom. Re-insert the ribbon into the ribbon vibrator.

Putting the Machine into its Case

First lock the carriage with the *carriage locking lever* **7**, fold the *carriage return lever* **6** back and down.

Maintenance

The Olivetti Lettera 22 requires very little maintenance, however heavy the load of work. But naturally it will only give of its best if it is treated with the care that every fine machine deserves. Always slip the dust cover over the machine when it is not in use. Then to keep it up to concert pitch, follow these simple rules.

Type Cleaning

As soon as the typing lacks its usual crisp appearance, clean the type. Take off the *top cover* **17**. Now press the keys on the left half of the machine with open hand and slide a piece of paper under the lifted type bars. The paper will support the type and catch the dirt. Use the nylon brush which is supplied in the cleaning kit, dip it in any good typewriter cleaning fluid and clean each letter. After cleaning, dry the type letters, one by one, and remove the paper carefully. Follow the same procedure with the other half of the keys. Do not allow drops of cleaning fluid or pieces of dirt to fall into the machine or to adhere to the type bars.

Cleaning the Platen

Use a clean white cloth slightly dampened with good rubbing alcohol.

Internal Cleaning

For a quick internal cleaning, unscrew the metal plate under the machine, and clean the internal parts with the soft hair brush also supplied with the cleaning kit. It should be dry. Never oil the machine—it leaves the factory ready for long service without attention. Special oils are necessary and are supplied only to certain points.

Erasing

When erasing, move the carriage to one side so that the particles of rubber from the eraser fall clear of the type segment.

Backing Sheets

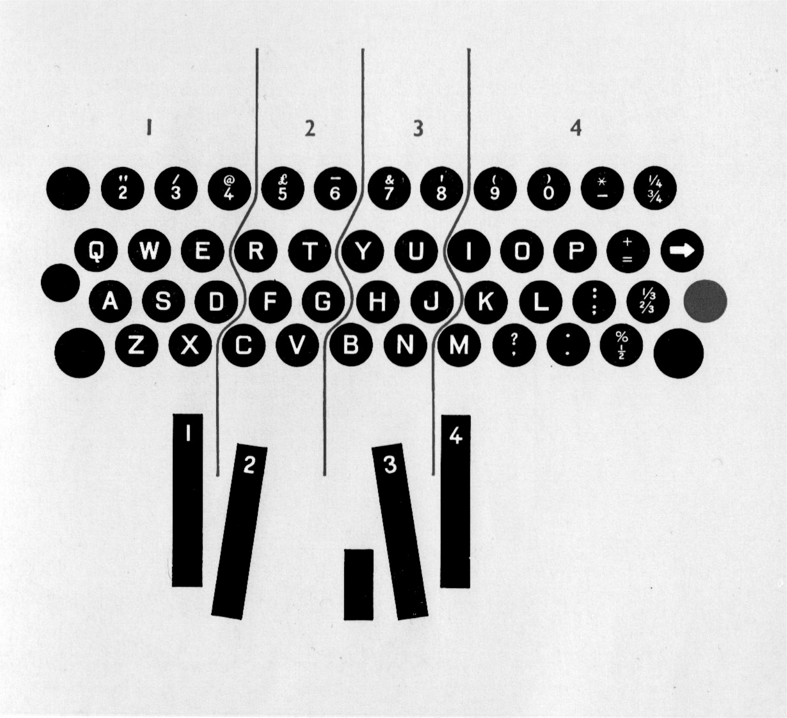
When typing single copies it is advisable to have an extra sheet of paper behind the one being typed. This ensures a better impression and reduces the wear on the platen.

Faulty Working

If a fault does develop take the machine to your Olivetti agent or to a good typewriter maintenance firm. As a rule, defects are small and very easily put right by an expert, but damage can be caused by inexperienced hands.

General Maintenance

From time to time you should have the typewriter thoroughly checked. This lengthens its life and keeps it in good working order. For such attention you are advised to go either to an Olivetti agent or to some reliable typewriter maintenance firm.



Practical guide to typewriting

on the Lettera 22

FINGERING

The method described is the "five finger" method, as only the middle and index fingers of each hand with the right thumb are used. It should not be confused with the "ten finger" or "touch" system, which requires greater concentration and practice and which does not come within the scope of this handbook.

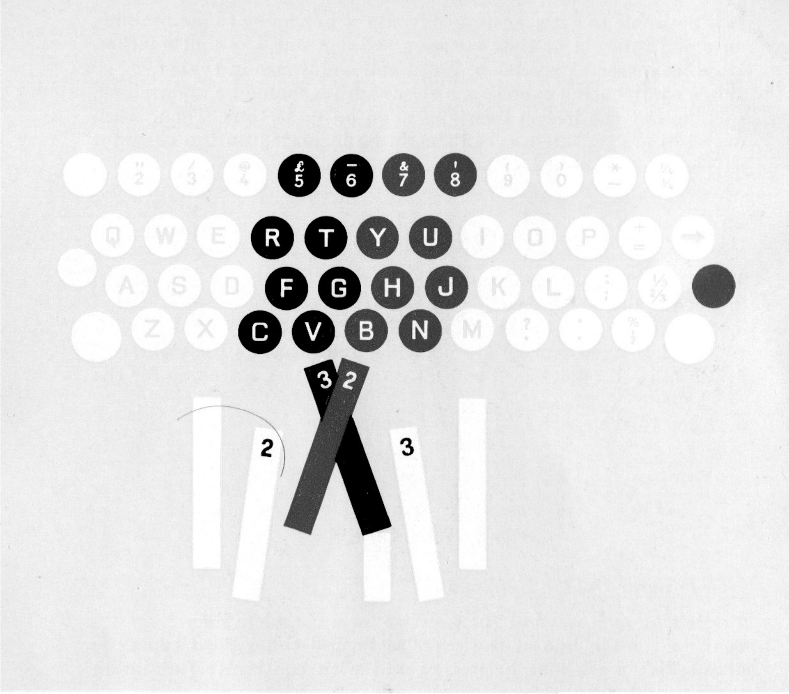
KEYBOARD

The keyboard is divided into four sections, thus:

The middle finger of left hand strikes the left outside section (1)
The index finger of left hand strikes the left central section (2)
The index finger of right hand strikes the right central section (3)
The middle finger of right hand strikes the right outside section (4)
The thumb of right hand strikes the space bar

Detach page 28 *in order to provide a ready reference to the keyboard as divided into the four sections.*

It will be seen from the above scheme that a keyboard section is assigned to each of the four fingers. This rule, however, should not be rigidly adhered to. It will be seen later that in order to attain greater speed, in some cases certain fingers will operate outside their own particular sections in order to assist others which are in more frequent use.



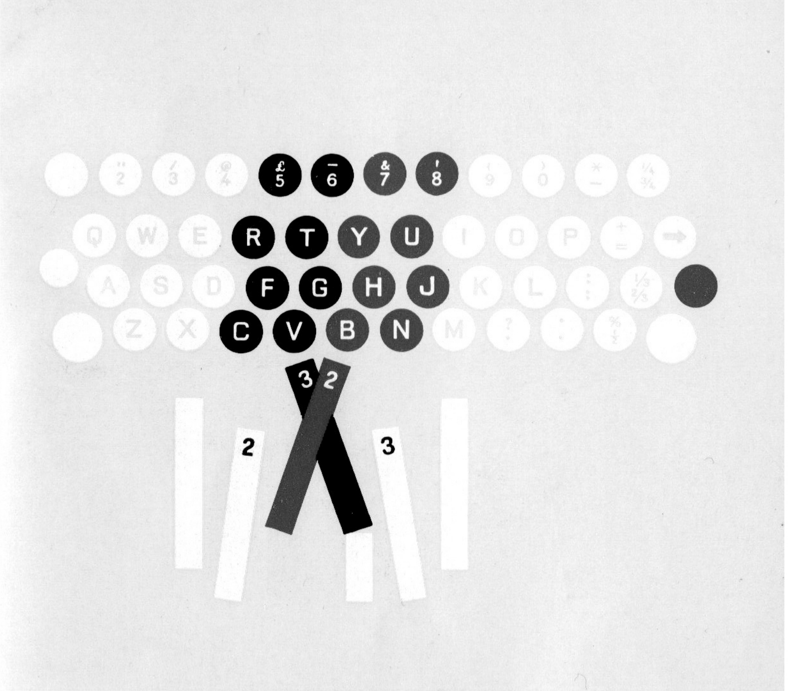
2nd EXERCISE—*Alternating the Hands*

Rule No. 1

When the first two letters of a word (e.g. BITE) are both in the area of the keyboard covered by one hand, and the first letter is in the index finger section, it is more convenient and quicker to strike the first letter with the index finger of the other hand.
Typing such words should now be practised and the interchange of fingers will soon become automatic.

Exercise

bite bust hike grit hurl vase host gear
very nice cash tray note jolt join cent
from gaze hoot fear hurt
from far and near by hook or by crook catch as catch can
nose to tail tea and toast



3rd EXERCISE—*Alternating the Hands*

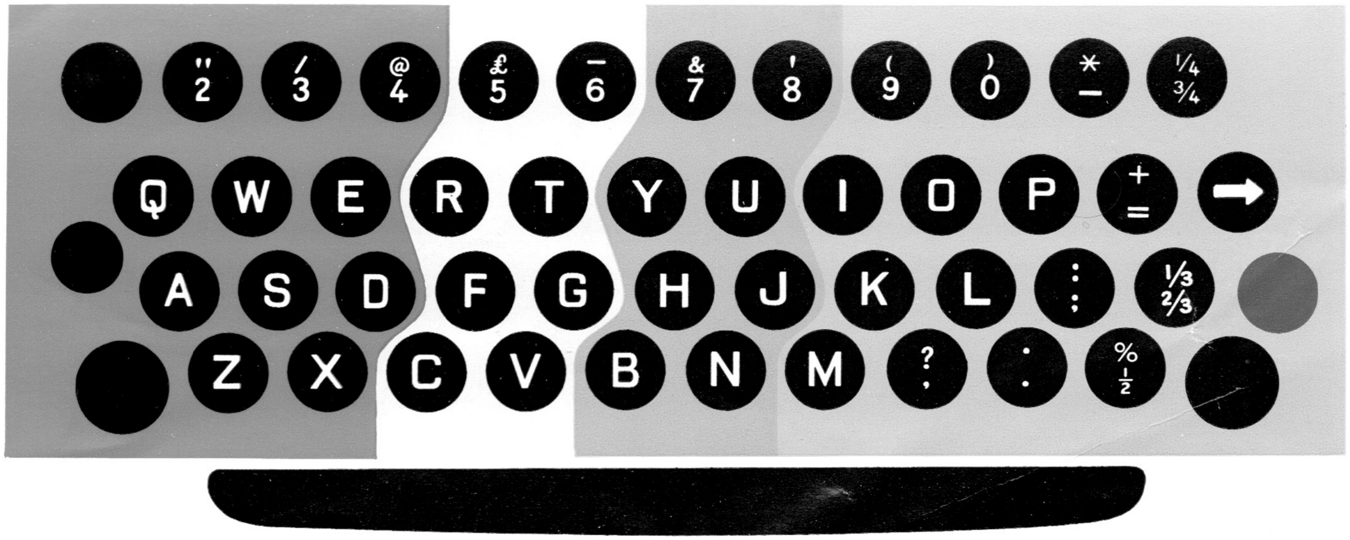
Rule No. 2

When three keys belong to the same hand (e.g. ART or IBO) and the second key belongs to an index finger (R or B), this must be struck with the index finger of the other hand.

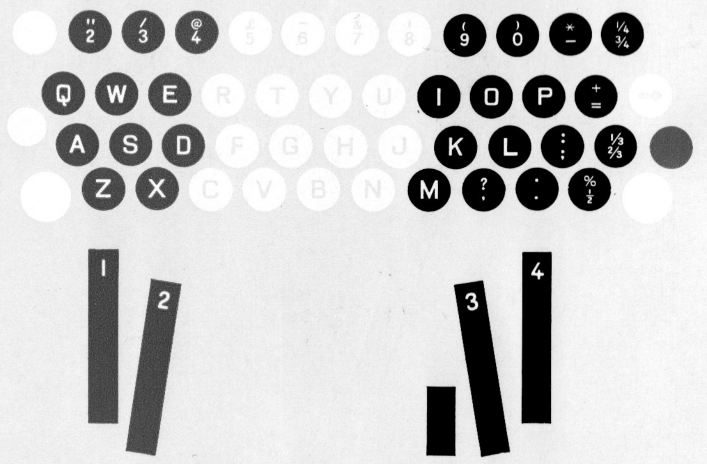
NOTE—Carry out the first repetitions very slowly, at a speed not greater than a line per minute

Exercise

pagan stew dray often union crest avert
vista star crease state verse duty pace
swagger data litter stave onion
chatter box dream of home better or worse
aged men are frail stand to attention


" 2 / 3 @ 4 £ 5 – 6 & 7 ' 8 (9) 0 * – ¼ ¾
Q W E R T Y U I O P + =
A S D F G H J K L ⅓ ⅔
Z X C V B N M ? , : . % ½

Divisions of the keyboard of the olivetti **Lettera 22**
For the "five finger" method of typing



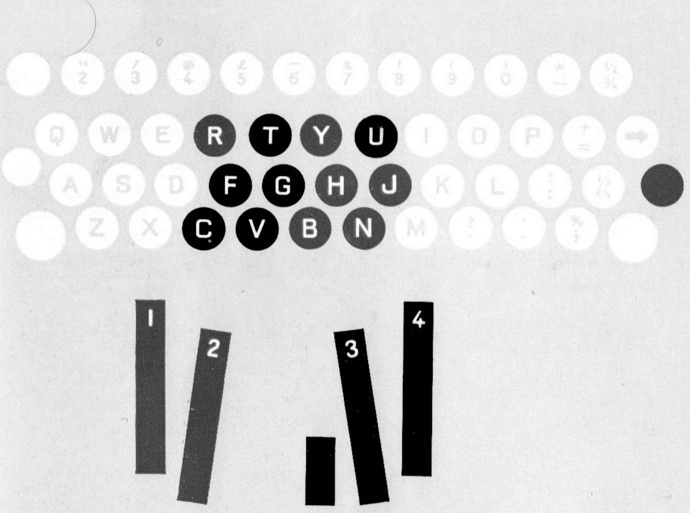
4th EXERCISE—*Alternating the Fingers*

When two keys belong to the same outside section (e.g. I or O), instead of striking with the same middle finger, it will be quicker to type that letter nearer to the centre (e.g. I) with the index finger of the same hand.

NOTE—This rule is applicable only in those cases where it can easily be done, and where it is desirable to avoid a rotating movement of the hand which would slow down typing speed.
Carry out the first exercises very slowly, at a speed no greater than a line per minute.

Exercise

sale mast come idea tempo easy open moist
doom seen psalm mope flip mesh lead mess
sulk moth shrimp
milk and water wear and tear skilled workmen are required
Palm Sunday Easter week-end zealous patriot



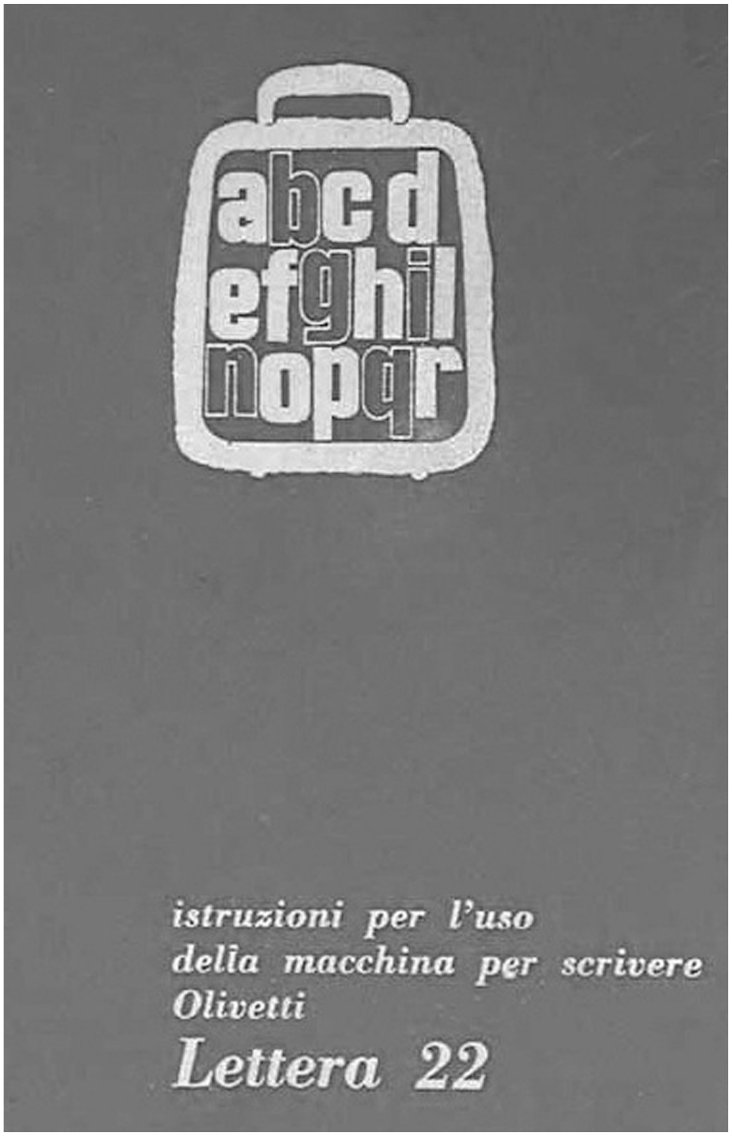
5th EXERCISE—*Sequence in the Central Zones*

Groups with R	*Groups with U*
rt-tr rg-gr rv-vr rf-fr rc-cr	ub-bu un-nu

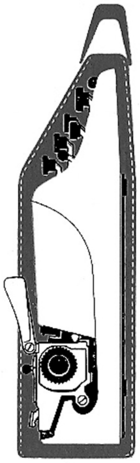
In the above-mentioned groups, the "R" and the "U" must be struck by their respective index fingers, whilst the other letter in the same section should be typed by the index finger of the other hand.

Exercise

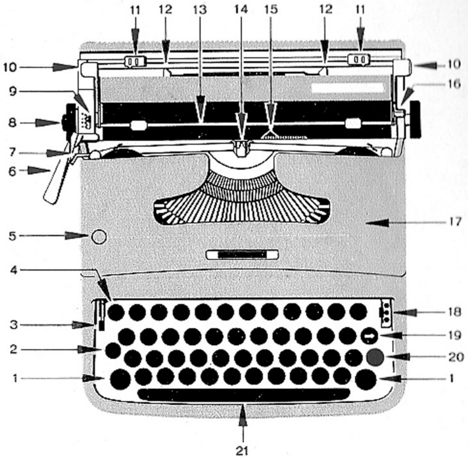
avert stress sport iceberg ground surf free street creed
arc tubby abuse unit walnut buyer suburb hunt uncle
justice
grace before meat turf for the lawn half-a-crown
blowing bubbles hunter and hunted sacrifice is not in vain


abcd
efghil
nopqr

istruzioni per l'uso
della macchina per scrivere
Olivetti
Lettera 22



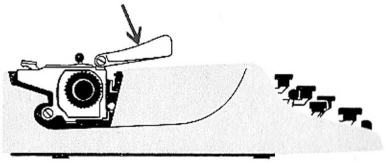
istruzioni per l'uso
della macchina per scrivere
Olivetti
Lettera 22



E' facile scrivere a macchina con una Lettera 22. Ma sarà ancora più facile e piacevole quando saprete utilizzarla in tutta la varietà dei suoi servizi, dopo aver letto accuratamente queste brevi istruzioni.

1 Tasti delle maiuscole
2 Tasto fissamaiuscole
3 Leva per impostare e annullare gli arresti dell'incolonnatore
4 Tasto liberamargine e capoverso
5 Regolatore del tocco
6 Leva dell'interlinea
7 Leva di bloccaggio del carrello
8 Bottone della frizione
9 Levetta del cambio d'interlinea
10 Leve liberacarrello
11 Marginatori
12 Aste reggicarta
13 Telaio premicarta
14 Guidacaratteri
15 Indice guidalinee
16 Leva liberacarta
17 Coperchio mobile
18 Leva del bicolore e neutro
19 Tasto di ritorno
20 Tasto dell'incolonnatore
21 Barra spaziatrice

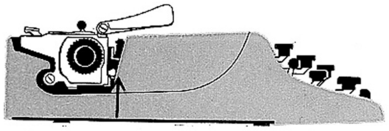
3



Per mettere la macchina in condizione di lavoro

Ribaltare in avanti la leva dell'interlinea **6***; togliere il blocco del carrello* **7***; assicurarsi che la leva del bicolore* **18** *sia sul disco azzurro e i marginatori si trovino alle estremità del carrello.*

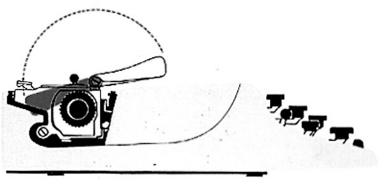
4

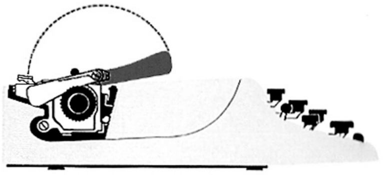


Bloccaggio del carrello 7

Quando si deve trasportare la macchina, è bene bloccare il carrello in posizione centrale, usando l'apposita levetta **7** *che è situata sulla sinistra.*

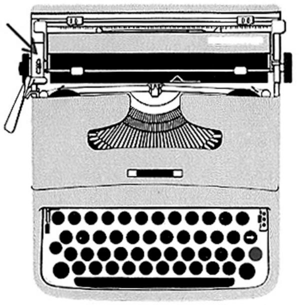
5





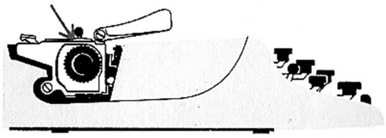
Leva dell'interlinea 6

Serve per portare a capo il carrello e cambiare la linea di scrittura. Ogni volta che si ripone la macchina sotto la copertina gommata o nell'apposita valigetta, la leva deve essere ribaltata indietro, poi spostata verso sinistra e quindi spinta in basso secondo la posizione indicata nella figura. Si eviterà così ogni rischio di danno.



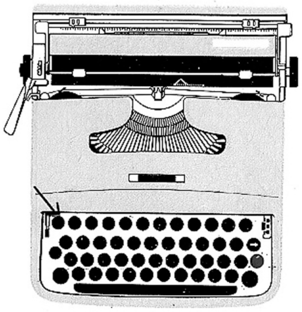
Cambio dell'interlinea 9

La distanza fra le righe del dattiloscritto (interlineatura) è regolata dalla levetta **9** *e può assumere i seguenti valori: posizione n. 1, mm. 5; posizione n. 2 mm. 7,5; posizione n. 3 mm. 10 (corrispondente all'interlineatura della carta da bollo). La posizione 0 svincola il rullo dal meccanismo d'interlinea, per scrivere fra riga e riga o per ritornare sulla interlineatura precedente.*



Frizione del rullo 8

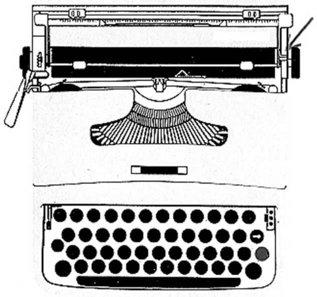
Per svincolare completamente il rullo dal meccanismo d'interlinea si preme il bottone **8** *che comanda il dispositivo di frizione. Si usa la frizione quando si rimette in macchina un foglio già scritto per proseguire la scrittura iniziata. Messo il foglio in macchina, si preme il bottone della frizione ruotando contemporaneamente il rullo fino a che le linee già scritte non coincidano esattamente con il margine superiore dell'indice guidalinee* **15**. *Si abbandona quindi il bottone e si fissa la levetta dell'interlinea* **9** *sulla posizione corrispondente alla distanza tra riga e riga della parte già scritta del foglio.*



Liberamargine e capoverso 4

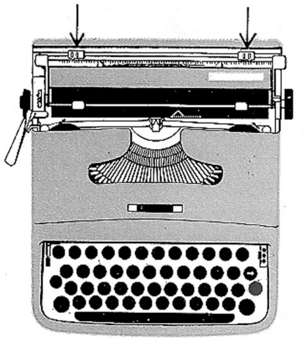
Quando il carrello è giunto al limite della linea di scrittura è possibile superare sia a destra che a sinistra i margini fissati premendo il tasto **4.**

Lo stesso tasto permette anche di ottenere il capoverso rientrato (quando cioè si vuole che la scrittura cominci più a destra del normale). Mentre la mano sinistra spinge il carrello a capo, l'indice destro deve tener premuto il tasto: il carrello si fermerà 13 mm prima del margine sinistro.



Leva liberacarta 16

Tirata in avanti, disimpegna il foglio dal rullo: serve quindi per sistemare a mano il foglio nella posizione corretta, perfettamente perpendicolare rispetto alla linea di scrittura. Serve anche quando si desideri introdurre in macchina più fogli con carta carbone: in questo caso è necessario tirare in avanti la leva prima di inserire i fogli sotto il rullo, e poi riportarla indietro.



Marginatori 11

Servono a fissare i limiti della scrittura sia a destra che a sinistra.
Per marginare a sinistra, *si sposti il carrello in modo che la feritoia guidacaratteri* **14** *coincida col punto in cui si desidera iniziare la scrittura. Si spinga poi il marginatore di sinistra verso destra, fino a che si arresti.*
Per marginare a destra, *si porti il carrello verso sinistra in modo che la feritoia guidacaratteri coincida col punto in cui dovrà terminare la scrittura. Si spinga poi il marginatore di destra verso sinistra, fino a che si arresti.*

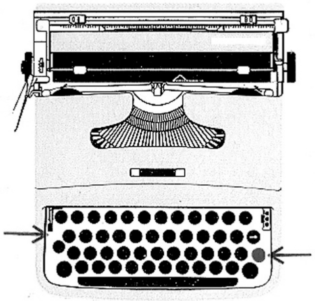
Barra spaziatrice 21

Fa avanzare il carrello di uno spazio e si usa soprattutto per distanziare una parola dall'altra. **Serve anche a correggere un errore assai frequente nella scrittura a macchina, cioè l'omissione di una lettera in una parola.**

Se, ad esempio, è stato scritto la comissione mista... *anzichè* la commissione mista..., *per inserire* la m *omessa*:

1) *cancellare la parola* commissione;
2) *riportare il carrello in corrispondenza della* a *della parola* la;
3) *abbassare una prima volta la barra spaziatrice, riabbassarla e, tenendola abbassata, battere la* c;
4) *alzare la barra, riabbassarla e, tenendola abbassata, battere la* o;
5) *ripetere le stesse operazioni fino a che non sia stata battuta tutta la parola* commissione.

```
la comissione mista....
la commissione mista....
```



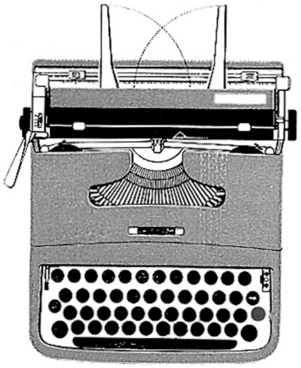
Uso dell'incolonnatore

Il dispositivo incolonnatore permette di incolonnare automaticamente parole o numeri, come nel caso di elenchi, prospetti, quadri riassuntivi ecc. Esso è regolato dal tasto dell'incolonnatore **20** *e dalla leva degli arresti* **3**. *Una volta stabiliti il numero e la posizione delle colonne che si desiderano ottenere, occorre fissare un arresto in* *corrispondenza della prima lettera di ciascuna colonna.*

Per impostare gli arresti - *Si fa scorrere il carrello fino a far coincidere la feritoia guidacaratteri* **14** *con il punto da cui si desidera iniziare la prima colonna e si tira in avanti la levetta* **3**. *Si fa quindi scorrere il carrello fino all'inizio della seconda colonna e si imposta, nello stesso modo, il secondo arresto, procedendo analogamente per tutte le altre colonne che si vogliono ottenere.*

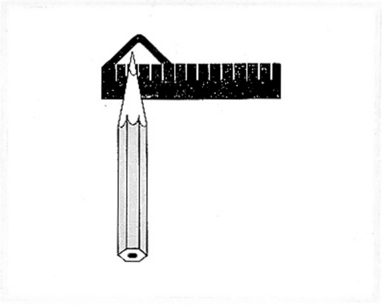
Per incolonnare - *Una volta impostati tutti gli arresti e iniziata la scrittura, per incolonnare basta premere il tasto* **20**: *il carrello si muoverà fermandosi automaticamente in corrispondenza della prima colonna; e così di seguito per le colonne successive.*

Per annullare gli arresti - *Si porta il carrello in corrispondenza dell'arresto da annullare e si spinge indietro la levetta* **3**. *Per annullare tutti gli arresti si porta il carrello a capo e lo si fa scorrere completamemente tenendo nello stesso tempo all'indietro la levetta.*



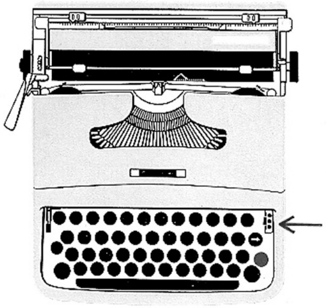
Aste reggicarta 12

Sostengono il foglio durante la scrittura: per alzarle basta agire con gli indici sui triangolini sporgenti alla loro base. Se ne raccomanda l'uso specialmente quando si scriva a più copie.



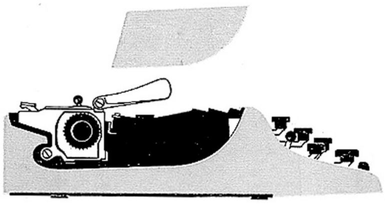
Indice guidalinee 15

Il margine superiore di questo indice corrisponde esattamente alla linea di scrittura: esso serve perciò come riferimento quando si debba scrivere su carta rigata o tornare su linee già scritte dopo che si è azionata la frizione o si è tolto il foglio di macchina. Le tacche bianche coincidono con l'asse centrale dei caratteri. La finestrella triangolare permette di tracciare sul foglio linee orizzontali o verticali: basta poggiare la matita in uno degli angoli e spostare il carrello (linee orizzontali) o girare il rullo (linee verticali).



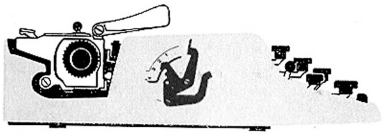
Leva del bicolore 18

Alla posizione alta (disco azzurro) corrisponde l'uso della parte superiore del nastro; alla posizione bassa (disco rosso) quello della parte inferiore.
Quando la leva del bicolore è sulla posizione intermedia (disco bianco) il nastro resta escluso dalla battuta.



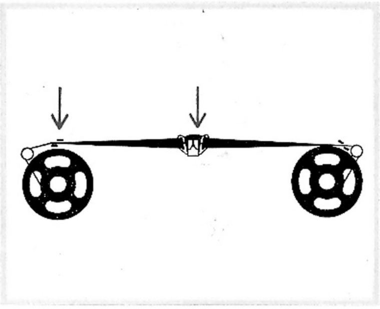
Coperchio mobile 17

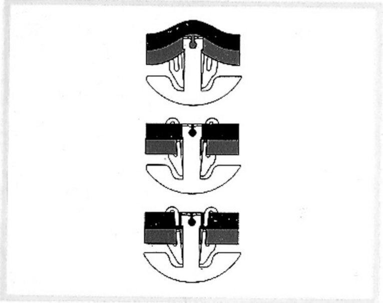
La macchina è dotata di un coperchio mobile **17** *che si può togliere facilmente ogni volta che sia necessario procedere alla pulizia dei caratteri o accedere al dispositivo regolatore del tocco.*



Regolatore del tocco 5

Una levetta situata sul fianco sinistro del telaio (sotto il coperchio mobile) permette di regolare la tastiera rendendola più o meno pesante alla mano di chi scrive. La posizione 1 corrisponde al tocco più leggero, la posizione 4 al più pesante: chi non abbia molta abitudine alla scrittura a macchina (ovvero sia abituato a scrivere su macchine a tastiera pesante) potrà tenere per qualche tempo il regolatore sulla posizione 4 e passare gradualmente alle posizioni 3, 2 e 1 quando la mano abbia acquistato scioltezza e velocità.



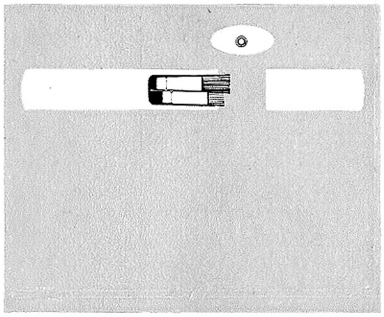


Il nastro

I nastri per la Lettera 22 *sono gli stessi usati per le macchine da ufficio, su bobine di eguale capacità.*

Movimento - *Ad ogni battuta il nastro avanza automaticamente ed automaticamente si inverte la sua marcia quando si è avvolto interamente su una delle bobine. Quando si desidera avvolgerlo su una delle bobine - ad esempio per cambiarlo - basta far girare la bobina col dito, dopo aver allontanato la forcella dal rullino.*

Cambio del nastro - *Tolto il coperchio mobile, si avvolge tutto il nastro su una delle bobine: lo si sfila quindi dal sollevanastro (v. figura), si svitano i due bottoni zigrinati di fermo delle bobine e infine si sfilano le bobine dal loro perno. Si aggancia il nastro nuovo alla bobina vuota e lo si avvolge fino a coprire la fibbia fissata a circa 15 cm. dalla estremità. Si ricollocano le bobine sui loro perni, curando che la parte rossa sia in basso, e si ripetono inversamente le operazioni precedenti. Si consiglia di usare nastri Olivetti di cotone o di seta, disponibili in diversi tipi (bicolori o monocolori) e tinte. Sono pure disponibili nastri a inchiostri indelebili il cui uso è autorizzato dalla Legge per le scritture di atti pubblici.*



Manutenzione

La macchina ha bisogno di pochissime cure. E' bene tuttavia proteggerla dalla sua peggiore nemica, che è la polvere: la copertina fornita con gli accessori serve appunto per questo.

Pulizia dei caratteri - *Quando si nota che l'impressione dei segni sulla carta non è più nitida, ciò significa che i caratteri hanno bisogno di pulizia. Si tolga allora il coperchio mobile e, premendo leggermente con la mano sinistra la tastiera prima su un lato e poi sull'altro, si distenda uno straccio sotto i martelletti che via via si sollevano. Si proceda quindi alla pulizia dei caratteri mediante il pennello di nailon (che si trova nell'astuccio degli accessori) inumidito con benzina.*

Pulizia del rullo - *Per pulire il rullo usare un panno bianco pulito, leggermente inumidito con alcol.*

Avvertenza - *La macchina esce dalla fabbrica con una lubrificazione sufficiente per un uso prolungato. Quindi non solo non è necessario, ma è nettamente sconsigliabile lubrificarla: occorrono olî adatti in punti adatti. Così pure è sconsigliabile improvvisarsi meccanici o affidarsi a meccanici improvvisati, sia per una periodica manutenzione generale, sia per ogni altra necessità. I negozi, i concessionari e gli agenti Olivetti potranno dare a chiunque un competente consiglio.*

IMPORTANTE

Le macchine Olivetti nuove, acquistate presso una Filiale, una Agenzia o un Rivenditore Olivetti, sono garantite al primo acquirente per dodici mesi dalla data d'acquisto. Durante tale periodo, l'acquirente ha diritto alla sostituzione delle parti eventualmente difettose di fabbricazione, con la sola spesa della mano d'opera per la sostituzione.

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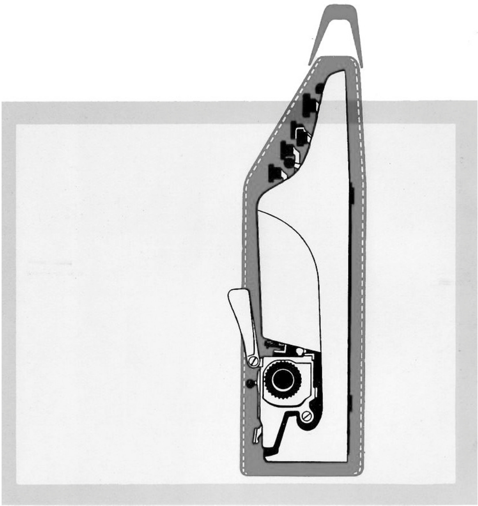


Istruzioni
per l'uso
della macchina
per scrivere

Olivetti Lettera 22

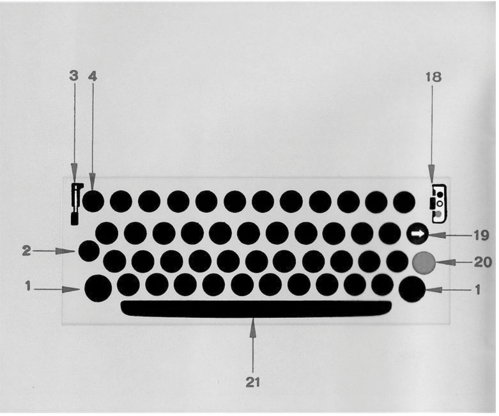
Prime operazioni
per mettere la macchina in condizione di funzionare

Ribaltare in avanti la leva dell'interlinea **6**; togliere il blocco **7** del carrello; assicurarsi che la leva del bicolore **18** sia sul disco azzurro; assicurarsi che la levetta del cambio d'interlinea **9** sia sulla posizione 1; assicurarsi che i marginatori **11** si trovino alle estremità del carrello.

Si può ora mettere il foglio in macchina

Alzare il telaio premicarta **13**; mettere il foglio ben diritto dietro il rullo, poi girare il rullo fino a che metà del foglio esca sul davanti; assicurarsi che il foglio sia perfettamente verticale facendo combaciare i margini della metà inferiore con quelli della metà superiore: se non combaciano, tirare in avanti la leva liberacarta **16** e spostare leggermente il foglio fino a che i margini combacino, poi spingere indietro la leva liberacarta; abbassare il telaio premicarta.

La tastiera



Tasti delle maiuscole 1

Per scrivere le maiuscole premere uno dei due tasti **1**.

Tasto fissamaiuscole 2

Per scrivere maiuscolo in continuazione premere questo tasto; per tornare alla posizione normale, premere uno dei due tasti **1**.

Tasto del ritorno 19

Fa retrocedere il carrello di uno spazio.

Tasto liberamargine e capoverso 4

Quando il carrello è giunto al limite della linea di scrittura è possibile superare i margini precedentemente fissati premendo questo tasto.

Lo stesso tasto permette anche di ottenere il capoverso rientrato (quando cioè si vuole che la scrittura cominci più a destra del normale). Mentre la mano sinistra spinge il carrello a capo, l'indice destro deve tener premuto il tasto liberamargine: il carrello si fermerà automaticamente 13 mm prima del margine.

Barra spaziatrice 21

Fa avanzare il carrello di uno spazio e si usa soprattutto per distanziare una parola dall'altra. Serve anche a correggere un errore assai frequente nella scrittura a macchina, cioè l'omissione di una lettere in una parola.
Se ad esempio è stato scritto, per errore, *la comissione di...* anzichè *la commissione di...*, per inserire la *m* omessa:

1) cancellare tutta la parola *comissione*;
2) riportare il carrello in corrispondenza della *a* della parola *la*;
3) abbassare una prima volta la barra spaziatrice, riabbassarla e. tenendola abbassata, battere la *c*;
4) alzare la barra, abbassarla nuovamente e, sempre tenendola abbassata, battere la *o*;
5) ripetere le stesse operazioni fino a che non sia stata battuta tutta la parola *commissione*, la quale è ora corretta e perfettamente centrata fra la parola che la precede e quella che la segue.

Leva del bicolore 18

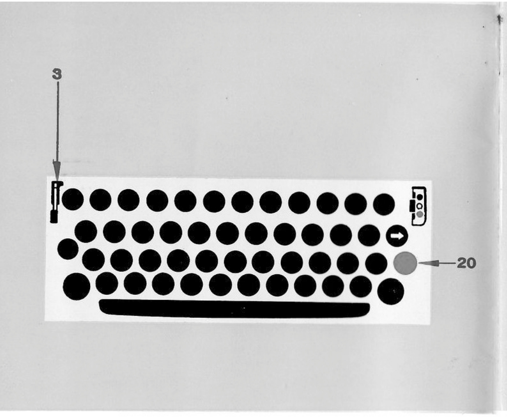
Alla posizione alta (disco azzurro) corrisponde l'uso della parte superiore del nastro; alla posizione bassa (disco rosso) quello della parte inferiore.
Quando si desidera imprimere matrici per duplicatori occorre portare la leva del bicolore sulla posizione intermedia (disco bianco) che esclude il nastro. Inoltre sono necessari degli accorgimenti per evitare che le sostanze di cui sono impregnati alcuni tipi di matrici in commercio danneggino il rullo. È quindi opportuno prima di usarli, chiedere il parere del più vicino agente Olivetti.

Tasto dell'incolonnatore 20 e leva degli arresti 3

Il dispositivo incolonnatore — di cui è dotato il modello LL — permette di incolonnare parole o numeri.
Stabiliti il numero e la posizione delle colonne che si desiderano ottenere, occorre fissare un arresto in corrispondenza di ciascuna colonna.

Per impostare gli arresti

Per impostare gli arresti si fa scorrere il carrello fino al punto in cui la feritoia guidacaratteri **14** coincide con il punto in



Impostazione degli arresti

cognome ↓	nome ↓	città ↓	importo ↓
Bianchi	Mario	Napoli	727,—
Targhetti	Giuseppe	Civitavecchia	110.834,—
Neri	Luigi	Roma	8.265,—
Verdi	Marco	Venezia	50,—
Romani	Alfredo	Trieste	250,—
Tofani	Cesare	Milano	1.345,—
Locchi	Alberto	Torino	91.170,—

cui si vuole iniziare la prima colonna e si tira in avanti la leva **3**. Si fa scorrere il carrello fino all'inizio della seconda colonna e si imposta, con lo stesso metodo, il secondo arresto, e così via per quante colonne si vogliono ottenere.

Per incolonnare

Impostati tutti gli arresti e iniziata la scrittura, per incolonnare basta premere il tasto dell'incolonnatore **20**: il carrello si muoverà fermandosi automaticamente in corrispondenza della prima colonna. Scritta la parola o il numero da incolonnare, si passa alla seconda colonna premendo nuovamente il tasto dell'incolonnatore e così di seguito per tutte le colonne successive. Se si desidera incolonnare numeri è necessario fissare gli arresti in corrispondenza di quel numero che, in ogni colonna, è composto del maggior numero di cifre, ricordandosi poi, quando si scrive, di spostare il carrello (mediante la barra spaziatrice) di tanti spazi quanti occorrono per incolonnare correttamente i numeri più piccoli.

Quando si desidera modificare la disposizione delle colonne o eliminarle tutte, occorre annullare i rispettivi arresti.

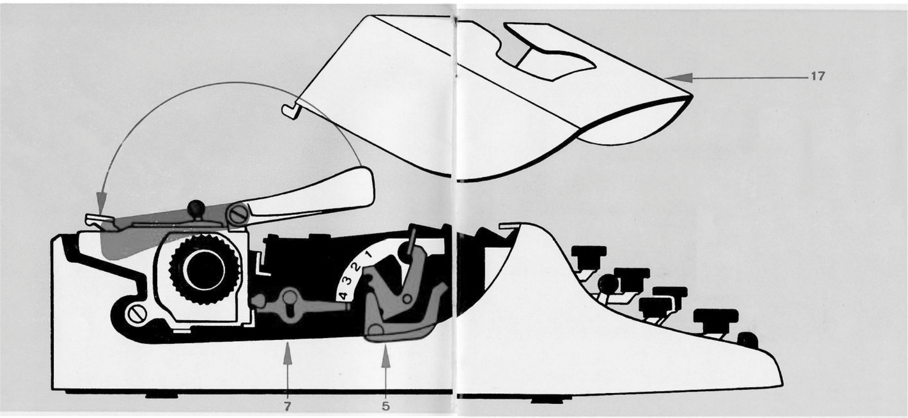
Per annullare uno o più arresti

Per annullare uno o più arresti si preme il tasto dell'incolonnatore in modo che il carrello si porti in corrispondenza dell'arresto da annullare, poi si spinge indietro la leva **3**.

Per annullare tutti gli arresti

Per annullare tutti gli arresti — operazione indispensabile ogni qualvolta si debba modificare completamente la disposizione delle colonne — si porta il carrello a capo, poi si fa scorrere all'estrema sinistra tenendo contemporaneamente spinta indietro la leva degli arresti: alla fine della corsa del carrello tutti gli arresti risulteranno eliminati.

Il carrello



Leva di bloccaggio del carrello 7

Serve a bloccare il carrello in posizione centrale, per impedirgli di scorrere durante il trasporto della macchina. Il carrello deve essere bloccato ogniqualvolta la macchina viene messa nella valigetta.

Leva dell'interlinea 6

Serve per portare a capo il carrello e per cambiare la linea di scrittura. Quando alla macchina si applica la copertina o la valigetta, la leva deve essere ribaltata indietro, poi spostata verso sinistra e quindi spinta in basso fino a raggiungere la posizione indicata nella figura.

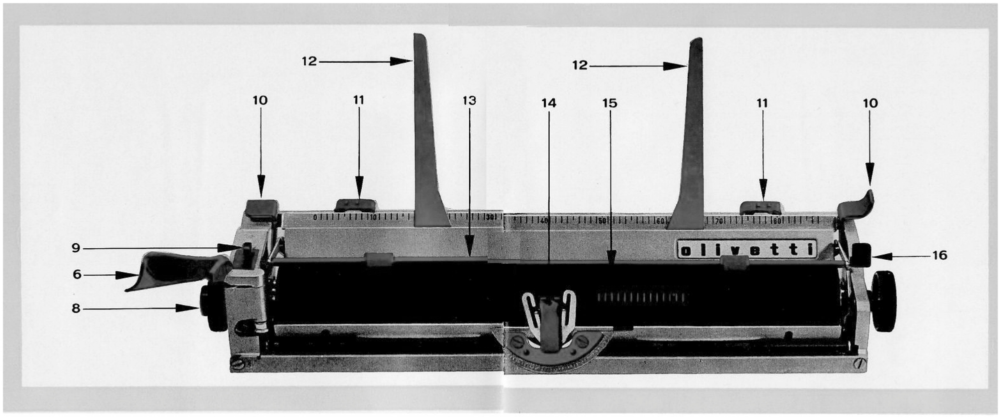
Levetta del cambio d'interlinea 9

Regola le distanze fra le linee di scrittura. Quando la levetta è: nella posizione 1 la distanza è di mm. 5; nella posizione 2 la distanza è di mm. 7,5; nella posizione 3 la distanza è di mm. 10; nella posizione 0 il rullo è libero, pur senza essere svincolato dal meccanismo d'interlinea (rullo in folle).

Si usa la posizione 0 quando: 1) si desidera scrivere in punti che non corrispondano alle posizioni date dagli scatti dell'interlinea, come nel caso di segni leggermente spostati in basso o in alto (ad es. H_2 SO_4, $a^3 + b^3$), o per aggiunte o correzioni fra le linee. Per tornare esattamente alla linea temporaneamente abbandonata basta rimettere la levetta nella posizione precedente; 2) si desidera scrivere su una carta rigata che abbia righe a distanze diverse da quelle sopraindicate. In tal caso, per passare da una riga all'altra, è necessario far ruotare il rullo in modo che le righe della carta coincidano con il margine superiore dell'indice guidalinee **15**.

Bottone della frizione 8

Premendo questo bottone si rende libero il rullo, svincolandolo completamente dal meccanismo d'interlinea. Si usa la frizione quando si rimette un foglio già scritto in macchina per proseguire la scrittura iniziata. Messo il foglio in macchina, si preme



il bottone della frizione ruotando contemporaneamente il rullo fino a che le linee già scritte coincidano esattamente con il margine superiore dell'indice guidalinee **15**. Fatto questo, si abbandona il bottone e si fissa la levetta dell'interlinea **9** sulla posizione corrispondente alla distanza usata in precedenza.

Regolatore del tocco 5

Questo dispositivo, che si trova sul fianco sinistro del telaio (sotto il coperchio mobile) permette di regolare la tastiera, rendendola più o meno pesante alla mano di chi scrive. Alla posizione 1 il tocco è più leggero, alla posizione 4 è più pesante. È opportuno che chi comincia per la prima volta a scrivere a macchina (ed anche chi è abituato a scrivere su macchine a tastiera pesante) inizi tenendo per qualche tempo il regolatore sulla posizione 4; in seguito, quando la mano avrà acquistato scioltezza e velocità, può passare alle posizioni intermedie fino a raggiungere la posizione 1.

Coperchio mobile 17

Per regolare il tocco, cambiare il nastro, pulire i caratteri, è necessario togliere il coperchio mobile, alzandolo e sfilandolo dai suoi alloggiamenti.

Leve liberacarrello 10

Premendo una di queste leve il carrello scorre liberamente verso sinistra e può essere così portato nella posizione voluta.

Telaio premicarta 13

Tiene ben tesa la carta contro il rullo: è necessario sollevarlo quando si eseguono cancellature.

Leva liberacarta 16

Tirata in avanti, disimpegna il foglio dal rullo: serve quindi per sistemare a mano il foglio nella posizione corretta, perfet-

tamente verticale. Serve anche quando si vogliono introdurre in macchina più fogli con carta carbone: in questo caso è necessario tirare in avanti la leva prima di inserire i fogli sotto il rullo, e poi riportarla indietro.

Aste reggicarta 12

Sostengono il foglio durante la scrittura: per alzarle basta premere con gli indici sui triangoli sporgenti.

Marginatori 11

Sono spostabili, con una leggera pressione del dito, lungo la scala graduata (ad ogni tacca della scala corrisponde uno spazio); servono a fissare i limiti della scrittura sia a destra che a sinistra.

Per marginare a sinistra, dopo aver introdotto il foglio in macchina, si sposti il carrello in modo che la feritoia guidacaratteri **14** coincida col punto in cui si desidera iniziare la scrittura. Quindi si spinga il marginatore di sinistra verso destra, fino a che si arresti.

Per marginare a destra si porti il carrello — mediante una delle due leve liberacarrello **10** — verso sinistra in modo che la feritoia guidacaratteri coincida col punto in cui si desidera terminare la linea di scrittura. Quindi si spinga il marginatore di destra verso sinistra fino a che si arresti. Quando, impostati i marginatori, si desideri scrivere oltre i limiti fissati, si ricorra al tasto liberamargine **4**, come è indicato a pag. 4.

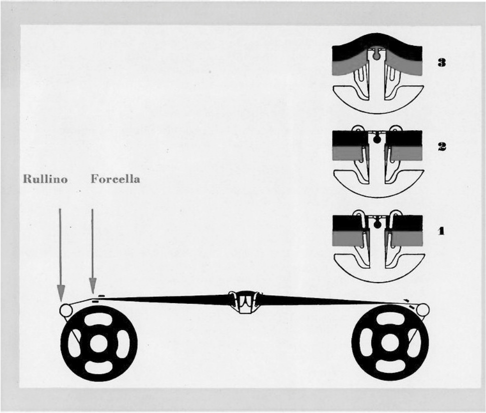
Indice guidalinee 15

Il margine superiore di questo indice corrisponde esattamente alla linea di scrittura: esso serve perciò come riferimento quando si debba scrivere su carta rigata o tornare su linee già scritte dopo che si è azionata la frizione o si è tolto il foglio di macchina. Le tacche bianche coincidono con l'asse centrale dei caratteri. La finestrella triangolare permette di tracciare sul foglio linee orizzontali o verticali: basta poggiare la matita in uno degli angoli e spostare il carrello (linee orizzontali) o girare il rullo (linee verticali).

Campanello

Avverte che rimangono solamente pochi spazi prima della fine della linea di scrittura. Il numero degli spazi varia secondo il tipo del carattere.

Il nastro



Il nastro ha normalmente due parti: la superiore, di solito blu o nera, la inferiore, rossa. Per passare dall'una all'altra occorre azionare la leva del bicolore **18** come è indicato a pag. 5. Il nastro di questa macchina è dello stesso tipo usato per le macchine da ufficio, ed è montato su bobine di uguale capacità.

Movimento del nastro

La marcia del nastro è automatica, nel senso che avanza ogni volta che si battono i tasti. Quando il nastro si è avvolto interamente su una delle bobine, la marcia si inverte automaticamente. Quando si desidera avvolgere il nastro su una delle bobine — ad esempio, per cambiarlo — basta far girare col dito la bobina scelta, curando che la forcella sia lontana dal rullino.

Cambio del nastro

Tolto il coperchio mobile, si avvolge tutto il nastro su una delle bobine: quindi si sfila il nastro dal sollevanastro (v. figura),

si svitano i due bottoni zigrinati di fermo delle bobine e infine si sfilano le bobine dal loro perno. Si aggancia il nastro nuovo alla bobina vuota e lo si avvolge fino a coprire la fibbia fissata a circa 15 cm. dalla estremità. Si ricollocano le bobine sui loro perni, curando che la parte rossa sia in basso, e si ripetono inversamente le operazioni precedenti.
Si consiglia di usare nastri originali Olivetti.

Prima di mettere la macchina nella custodia

Bloccare il carrello con la leva di bloccaggio **7**, ribaltare indietro la leva dell'interlinea **6** e spingerla in basso.

Manutenzione

La macchina ha bisogno di pochissime cure ed è costruita in modo da sopportare un lavoro pesante. Nondimeno è necessario farla oggetto di qualche attenzione per assicurarle una perfetta efficienza ed una lunga vita. Come consiglio di ordine generale, si ricordi sempre di applicare la copertina gommata tutte le volte che la macchina è inoperosa: la polvere è la sua peggior nemica. Inoltre, ed in rapporto all'intensità di lavoro cui la macchina è sottoposta, è opportuno procedere periodicamente ad alcune pulizie e manutenzioni che qui elenchiamo.

Pulizia dei caratteri

Quando si nota che l'impressione dei segni sulla carta non è più perfettamente nitida, tolto il coperchio mobile, premere leggermente, con la mano sinistra aperta, la tastiera, prima su un lato, poi sull'altro, infilando contemporaneamente con la destra uno straccio steso sotto i martelletti che via via si sollevano. Fatto questo, pulire i caratteri con il pennello duro di nailon (che si trova nell'astuccio degli accessori) inumidito con benzina. Fare attenzione che le gocce di benzina non colino lungo i martelletti e che i detriti non cadano nella macchina, ma vengano raccolti nello straccio. Terminata la pulitura, asciugare uno per uno i martelletti e togliere lo straccio.

Pulizia del rullo

Per pulire il rullo usare uno straccio bianco pulito, leggermente inumidito con benzina.

Pulizia interna

Per una sommaria pulizia interna, smontare la lamiera che si trova sotto la macchina svitando le quattro viti che la tengono fissata: poi pulire gli organi interni con il pennello morbido di setola (anch'esso nell'astuccio degli accessori) asciutto. Non lubrificare mai la macchina, che esce dalla fabbrica pronta per un lungo uso. Per la lubrificazione occorrono olii speciali in punti adatti: aggiunte inopportune potrebbero compromettere il buon funzionamento della macchina.

Manutenzione generale

È consigliabile sottoporre periodicamente la macchina ad una manutenzione generale, che ne prolunga la vita e ne conserva intatte le prestazioni. Per questa manutenzione, è opportuno rivolgersi alle officine del nostro Servizio Tecnico Assistenza Clienti: con minima spesa, si avrà un lavoro rapido e perfetto.

Inconvenienti di funzionamento

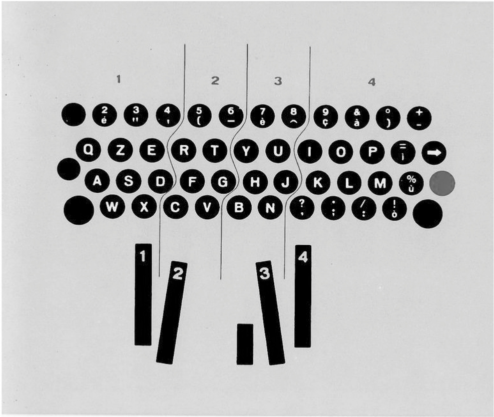
Non ci si improvvisi meccanici se la macchina presenta qualche inconveniente di funzionamento: quasi sempre si tratta di inconvenienti di minima importanza che però possono divenire gravi se trattati da persone inesperte. Anche in questo caso rivolgersi con tutta fiducia alle officine del nostro Servizio Tecnico Assistenza Clienti.

Per scrivere con la Lettera 22

Guida pratica alla dattilografia

METODO DI DIGITAZIONE

Il metodo che si espone è quello delle *cinque dita*, così detto perchè utilizza l'indice e il medio di ciascuna mano e il pollice della mano destra, che risultano più atti alla percussione dei tasti, tralasciando quello delle dieci dita che richiede una maggiore applicazione ed esula quindi dallo scopo di questo opuscolo.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A S D F G H J K L M % ù
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1
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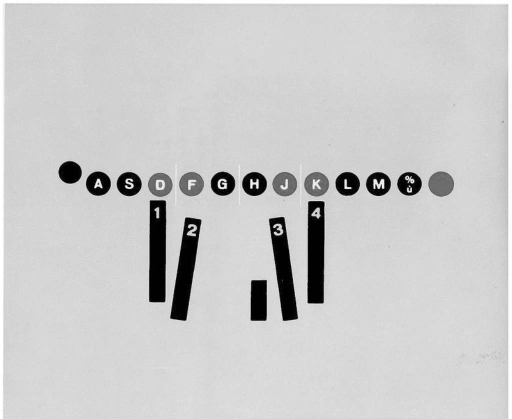
TASTIERA

La tastiera viene divisa in quattro zone, nel modo seguente:

Il medio della mano sinistra batte la zona laterale sinistra (1)
L'indice della mano sinistra batte la zona centrale sinistra (2)
L'indice della mano destra batte la zona centrale destra . (3)
Il medio della mano destra batte la zona laterale destra . (4)
Il pollice della mano destra batte la barra spaziatrice.

Per avere sempre sottocchio la tastiera divisa nelle quattro zone staccare la pag. 28.

Come appare dallo schema che precede, ad ognuna delle quattro dita è assegnata una zona della tastiera. Questa norma non deve essere però considerata rigorosa. Si vedrà oltre che per raggiungere una maggiore velocità, in qualche caso talune dita usciranno dalla propria zona per portare aiuto ad altre più impegnate.



POSIZIONE FONDAMENTALE DELLE DITA

La posizione fondamentale delle dita si riferisce alla seconda fila dei tasti (v. figura). È necessario fare ad essa costante riferimento, soprattutto se si vuol arrivare a scrivere senza guardare la tastiera.

PERCUSSIONE DEI TASTI

I tasti non debbono essere premuti, ma *percossi* leggermente, con la forza appena sufficiente ad ottenere una scrittura nitida. Una maggiore forza produrrebbe un rallentamento della scrittura e uno spreco inutile di energia.

Il «regolatore del tocco» della Lettera 22 è, in questo senso, di grande aiuto per adattare il grado di elasticità della tastiera alla pressione abituale della mano.

La percussione dei tasti deve avvenire in modo rapido e scattante, riducendo i movimenti all'indispensabile. Le mani debbono essere tenute il più possibile ferme: sono soprattutto le dita che debbono muoversi, alzarsi, abbassarsi e passare da un tasto all'altro.

RITMO

È bene abituarsi fin da principio a mantenere un uguale intervallo di tempo fra battuta e battuta. Il ritmo accresce la precisione, la celerità e la resistenza al lavoro a macchina.

All'inizio delle esercitazioni si tenga un ritmo lento, scandendo le lettere mentalmente o a bassa voce. In seguito, quando si ripeteranno gli esercizi, si provi ad aumentare la velocità fino al punto in cui si può mantenere senza sforzo un ritmo costante.

NORME PER L'ESECUZIONE DEGLI ESERCIZI

1. Inserire il foglio nella macchina.
2. Disporre la levetta d'interlinea sul n. 1.
3. Fissare i marginatori in modo da ottenere una linea di circa 60 battute, lasciando il margine di sinistra sempre maggiore di quello di destra.
4. Immaginare mentalmente la posizione dei tasti prima ancora di comporre la parola.
5. Attenersi alla velocità stabilita per ciascun esercizio.

ESERCIZI

1º ESERCIZIO - *Successioni semplici.*

Le parole seguenti sono scelte in modo che ogni dito possa rimanere nella zona stabilita. Ci si riferisca quindi alla tastiera della fig. 1 (uno spazio fra parola e parola):

tiro coro dico duca dove luce ciel alto
sito zona pure pien pala arma viso male
mano qual quel dirà metà così uscì però
abbi fiducia nella vittoria — viene sovente qui — è riuscito bene governa la città — nell'ora attuale.

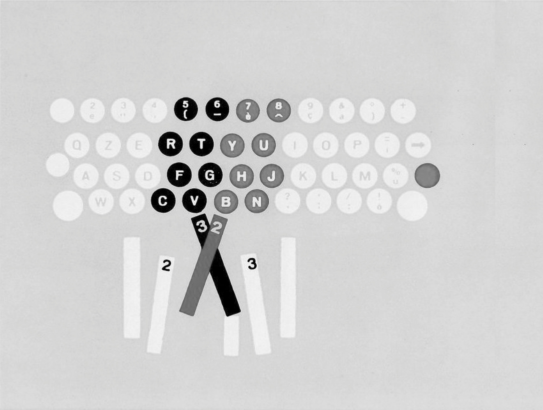
Come eseguire gli esercizi.

1 - Ripetere ogni parola dell'esercizio per un'intera linea. Es.:
bene bene bene bene bene bene bene ecc.

2 - Ripetere ogni linea dell'esercizio più volte finchè si riesca a scrivere senza esitazione e con continuità (minimo tre volte):
bene fine viva cura voce cito ogni fuga

3 - Ripetere le frasi di seguito, per almeno cinque linee:
governa la città — governa la città — governa la città — ecc.

NOTA - Le prime ripetizioni debbono essere eseguite molto lentamente, impiegando non meno di un minuto per linea.



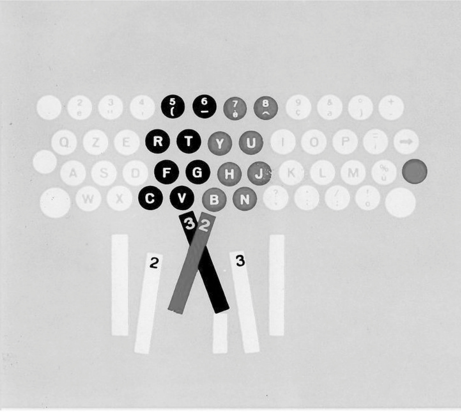
2º ESERCIZIO - *Alternanza delle mani.*

Prima regola:

Quando il primo di due tasti che appartengono alla stessa mano (es.: BI) è iniziale di parola e nello stesso tempo appartiene ad un indice, esso (B) deve essere battuto dall'indice dell'altra mano (v. figura).

Ed ora si eseguano gli esercizi facendo attenzione di seguire la regola per le prime parole. Lo scambio delle dita diverrà presto spontaneo. Quando avrete compiuti anche gli esercizi seguenti, vi accorgerete che le dita, nello scrivere qualsiasi parola, batteranno automaticamente sui tasti più opportuni senza che vi sia bisogno di ricordare la regola.

nido nodo noce ceto noto vela vero fame gela
rema tele tale gala cane rame tana vero liti
bianco vecchi venire faccia ultimo
non far mai male — è gente umana — quel tale è noto a tutti.



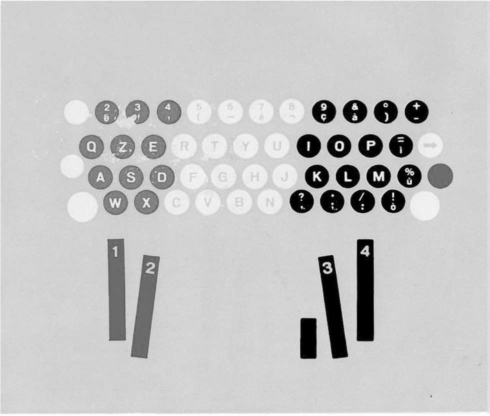
3º ESERCIZIO - *Alternanza delle mani.*

Seconda regola:

Quando tre tasti appartengono alla stessa mano (es.: ARA o IBO) e il secondo si riferisce ad un indice (R) o (B) questo deve essere battuto con l'indice dell'altra mano.

cara data dava sera seta fare fece pace
tace paga star stai cibo tino vino fino sono
avere aveva vista erano tardi stava versi
stato testa scena breve luogo
leggete la lettera — sta qui vicino — la nave reca vino — la pace è stata fatta — stava accanto alla finestra.

NOTA - Eseguire le prime ripetizioni molto lentamente, ad un'andatura non superiore ad una riga al minuto.

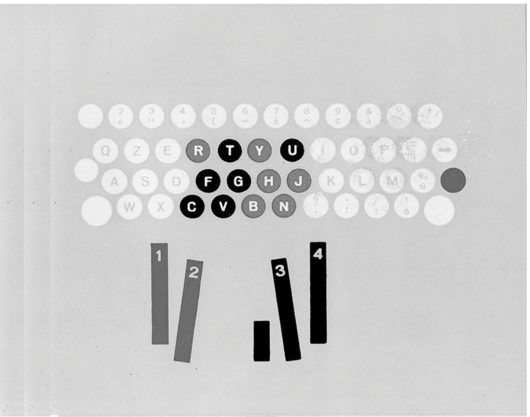


4º ESERCIZIO - *Alternanza delle dita.*

Quando due tasti appartengono ad una stessa zona laterale (es.: IO), anzichè essere battuti con lo stesso dito medio, si ricorre talvolta all'aiuto dell'indice della stessa mano (I) per aumentare la velocità.

fior suoi asta agli dopo fede sala zero rese come essa idea loro volo vide poco tuoi cioè sarà farà fiore fiume colmo colpo salma salpa fogli forza forse tempo il romanzo non ebbe seguito — il nemico venne liberato — ha voluto il mio denaro — mi dette il giornale — la situazione è difficile — il silenzio è spesso la migliore forza.

NOTA - Questa regola si applica solo nei casi in cui si presenta di facile attuazione, e ciò per evitare un movimento di rotazione della mano che rallenterebbe la velocità di scrittura.
Eseguire le prime ripetizioni molto lentamente, ad una andatura non superiore ad una riga al minuto.



5º ESERCIZIO - *Successioni centrali.*

Gruppi con « r »	*Gruppi con « u »*
rt-tr rg-gr rv-vr rf-fr rc-cr	ub-bu un-nu (uy-yu uh-hu uj-ju)

Nei gruppi sopra indicati, la « r » e la « u », restano battuti dal rispettivo dito indice, mentre l'altra lettera viene battuta dall'indice dell'altra mano.

altra certa circa credo entro forte grido oltre parte porto trova dovrà potrà buono lungo nuovo punto alcun tribù virtù trovò nulla appunto avrebbe ciascun decreto fortuna maestro nessuna stretto credo che verrà a minuti — è certo che si tratta di merce buona — non aver nessun dubbio — la fortuna è cieca — la strada fu aperta al pubblico — la patria fu liberata dallo straniero — il sacrificio non è stato vano.

NOTA - Eseguire questo esercizio come i precedenti.

6º ESERCIZIO

Maiuscole. Dovendosi scrivere una sola lettera maiuscola, il tasto delle maiuscole viene abbassato dall'indice della mano sinistra mentre la battuta della lettera avviene con l'indice della mano destra. Per più lettere maiuscole si usa il fissa-maiuscole e si segue la digitazione normale.

Ancona Bologna Como Domodossola Empoli Firenze

Genova Haiti Imola Jesi Kent Livorno Milano

Napoli Ostia Palermo Quito Roma Salò Savona

Torino Udine Venezia Washington Xantia Zara

Punteggiatura. I segni di punteggiatura esigono di essere seguiti da uno spazio (, . ; : ? !):

Noi leggevamo; essi parlavano. Eccoti la lettera: leggila! Chi mi chiama? Ecco un elenco dei nostri principali articoli: calze, camicie, cravatte. Ci disse che vi avrebbe atteso; poi se ne andò. Attendiamo una Vostra ordinazione: Vi praticheremo un forte sconto.

Le virgolette e le parentesi esigono uno spazio esterno:

Vi accorderemo un ribasso del 3% (tre per cento). Hai letto il « Corriere della Sera » di oggi? « Pietà » ripetè il vinto.

L'apostrofo non esige alcuno spazio nè prima nè dopo:

un'altra volta — senz'attendere — c'interessa — l'ideale — dov'era.

I segni aritmetici vogliono lo spazio prima e dopo:

20 + 15 = 35   40 — 10 = 30   12 × 2 =24   25 : 5 =5   3%

Numeri: Il numero « uno » si ottiene con la « elle » minuscola: lo « zero » con la « O » maiuscola:

1.300 21.405 90.181 76.150 432.105.678,90 10.805.409,25

Accento. Se si tratta di tutte maiuscole, bisogna eseguirlo col segno dell'apostrofo:

CITTA' CAFFE' TRIBU' QUALITA' QUANTITA' AUTORITA'

là nè lì già ciò può giù più così dirà andò però cioè potè sentì

AVVIAMENTO ALLA VELOCITÀ

1 - Venti parole lunghe e quindi difficili, scelte fra le più frequenti, da ripetersi più volte:

Caratteristiche ministeriale insopportabile tonnellaggio

elegantissimo determinazione somministrazione perfezionare

ambasciatore magistratura proprietario professionista

particolarmente ininterrottamente disponibilità rappresentante

settentrionale amministrativo riconoscenza naturalezza

Queste parole devono essere ripetute più volte, senza errori, per gradi, fino a raggiungere: 2 linee al minuto, 3 linee, 4 linee, 5 linee al minuto, senza errori.

FRASI DI ALLENAMENTO

Frase sull'alfabeto. La frase seguente contiene tutte le lettere dell'alfabeto e dovrà essere ripetuta a più riprese, intercalata con la copiatura di brani, fino ad eseguirla: 10, 20, 30, 50, 100, 200 volte:

Vogliate confermarci la spedizione di quanto vi abbiamo richiesto (battute 65).

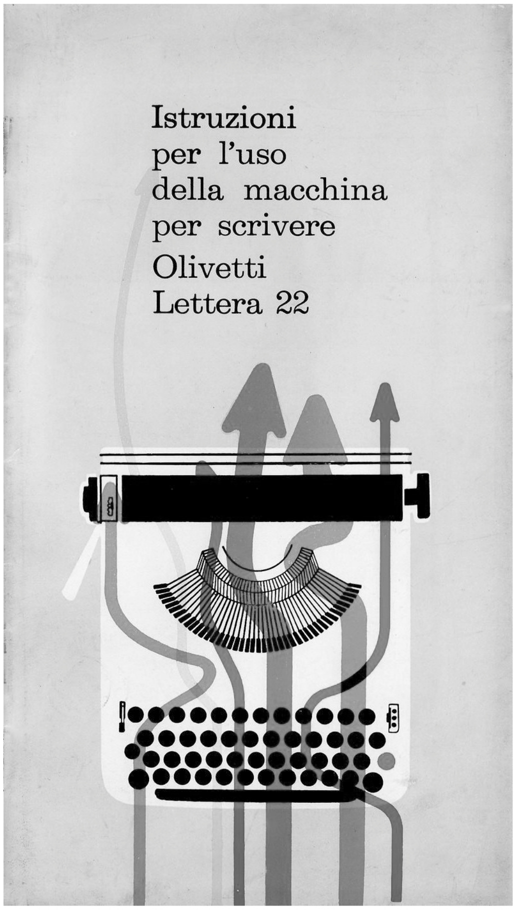
Sarà opportuno prendere nota del numero delle battute al minuto, conseguite in ogni singola prova. Curare sempre l'esattezza di scrittura.

ALTRE FRASI DI ALLENAMENTO

Abbiamo preso nota di quanto ci comunicate con la Vostra del 2 corrente.

Per nostre ragioni amministrative siamo venuti nella determinazione di effettuare forniture soltanto dietro rimessa dell'importo di fattura.

Abbiamo letto con molta attenzione le proposte che ci fate e ci dispiace di doverVi dire che le condizioni che ci avete imposte non ci hanno permesso di eseguire l'ordinazione.



Istruzioni
per l'uso
della macchina
per scrivere
Olivetti
Lettera 22

Organizzazione Commerciale in Italia

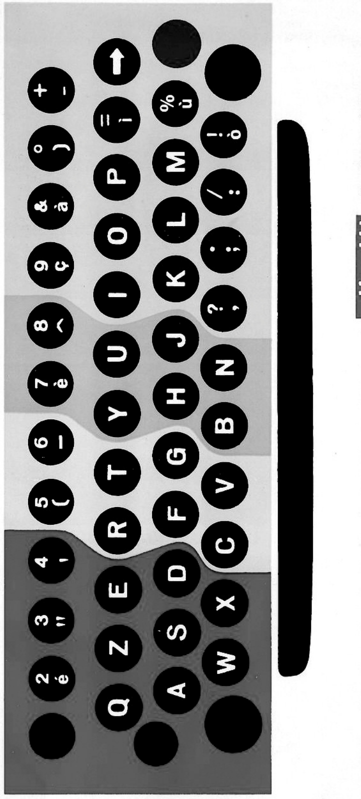
FILIALI E SUCCURSALI

ALESSANDRIA	Corso Roma 6	Tel. 46 17
AREZZO	Via Roma 11/15	Tel. 26 82
BARI	Via Calefati 100/108	Tel. 16 6 86
BIELLA	Via Gramsci 10	Tel. 25 5 28
BOLOGNA	Via Marconi 9	Tel. 27 39 42
BRESCIA	Via S. Martino della Battaglia 2	Tel. 53 1 71
CAGLIARI	Corso Vitt. Emanuele 1	Tel. 34 03
CATANIA	Piazza Università 10	Tel. 17 8 14
CATANZARO	Corso Mazzini 215/217	Tel. 34 49
COSENZA	Corso Mazzini 11	Tel. 30 14
FIRENZE	Via de' Servi 20	Tel. 28 25 71
GENOVA	Via Martin Piaggio 17/1-2	Tel. 87 34 41
LIVORNO	Largo Duomo 9 R	Tel. 22 0 39
MESSINA	Via Garibaldi 13	Tel. 18 6 46
MILANO	Largo Richini 6	Tel. 88 64
NAPOLI	Piazza Giovanni Bovio 22	Tel. 25 1 70
NOVARA	Corso della Vittoria 5	Tel. 28 6 92
PADOVA	Via Altinate 12	Tel. 39 4 43
PALERMO	Via Mariano Stabile 178	Tel. 15 5 55
PERUGIA	Corso Vannucci 101	Tel. 52 18
RAVENNA	Via Gordini 6	Tel. 22 3 35
ROMA	Piazza Barberini 52	Tel. 44 1 51
SASSARI	Piazza d'Italia 5	Tel. 24 9 61
SIRACUSA	Via Maestranza 23	Tel. 19 52
TORINO	Piazza Castello 113	Tel. 52 11 32
TRIESTE	Galleria Protti 4/I	Tel. 36 2 00
VARESE	Via Cavour 36	Tel. 21 5 55
VENEZIA	Ponte Teatro Rossini, S. Marco 3989	Tel. 24 1 18
VERONA	Via Scudo di Francia 2	Tel. 24 4 22
VICENZA	Via S. Barbara 1	Tel. 22 3 30

Agenti nei capoluoghi di provincia e nelle principali città

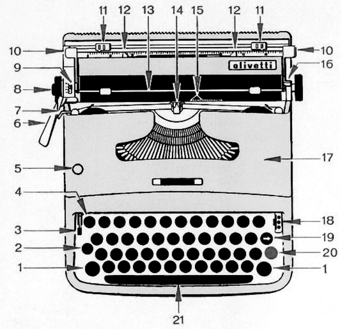
Ing. C. Olivetti & C., S. p. A.

Sede Centrale: Ivrea, Via Guglielmo Jervis, 11 - Tel. 36 31 (20 linee)
Direz. Generale Commerciale per l'Italia: Milano, Via Clerici, 4/6 - Tel. 88 36

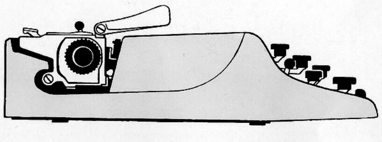


Divisione della tastiera della macchina per scrivere **olivetti** ***Lettera 22***

Per il metodo di dattilografia a "cinque dita"



1 Tasti delle maiuscole
2 Tasto fissamaiuscole
3 Leva per impostare e annullare gli arresti dell'incolonnatore
4 Tasto liberamargine e capoverso
5 Regolatore del tocco
6 Leva dell'interlinea
7 Leva di bloccaggio del carrello
8 Bottone della frizione
9 Levetta del cambio d'interlinea
10 Leve liberacarrello
11 Marginatori
12 Aste reggicarta
13 Telaio premicarta
14 Feritoia guidacaratteri
15 Indice guidalinee
16 Leva liberacarta
17 Coperchio mobile
18 Leva del bicolore e neutro
19 Tasto del ritorno
20 Tasto dell'incolonnatore
21 Barra spaziatrice



Da oggi entrate a far parte della grande schiera dei possessori di una Lettera 22: molte diecine di migliaia, in Italia ed all'estero. Quando avrete preso confidenza con la vostra nuova macchina sarete colpiti soprattutto dalla sua discrezione e dalla sua grande capacità di lavoro. È facile a usare, leggera, silenziosa; il suo tocco è morbido ed elastico. Le sue strutture, ridotte all'essenziale, sono tuttavia eccezionalmente robuste e dimensionate con larghezza. Occupa poco spazio ma è provvista di alcuni moderni dispositivi inconsueti alle macchine portatili perchè caratteristici delle più grosse macchine da ufficio: il regolatore del tocco, il cestino mobile, la guida del carrello su rulli a sfere, le bobine del nastro di grandi dimensioni, e molti altri ancora. Se avete qualche pratica di dattilografia vi accorgerete subito della sua velocità e precisione. In caso contrario, la Lettera 22 è la macchina più indicata per farvi diventare in breve tempo un esperto e veloce dattilografo.
Fate ora conoscenza con la vostra nuova macchina.
Leggete attentamente le istruzioni ed eseguite una dopo l'altra le operazioni indicate: operazioni tutte molto semplici, in pratica, anche se la descrizione potrà sembrarvi complicata. I pochi minuti spesi in questi preliminari vi permetteranno, in compenso, di sfruttare pienamente le grandi possibilità della vostra Lettera 22.

Reference: Olivetti Typefaces

OLIVETTI COMET 10 Pitch 6 lines to an inch

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OLIVETTI BULLETIN 5 Pitch 3 lines to an inch

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!@#$%¢&* 12345678

OLIVETTI GIANT PRIMER (alternate) 5 Pitch

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!"#$%¢&* 12345678

This is a specimen of Underwood
Vertical Script Type
10 Pitch 1234567890

This is a specimen of
UNDERWOOD DISTINCTIVE PICA
type 10 PITCH 1234567890

This is a specimen of
UNDERWOOD STYMIE Type
10 PITCH 1234567890

This is a specimen of UNDERWOOD
WIDE ELITE VICTORIA TYPE
10 PITCH 234567890

This is a specimen of UNDERWOOD
MEDIUM ROMAN Type 10 PITCH
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This is a specimen of UNDERWOOD
SMALL VICTORIA Type 10 PITCH
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This is a specimen of UNDERWO
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UNDERWOOD PICA VICTORIA Type
PITCH 1234567890 or 1234567

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ITALIC type
10 Pitch 12345678

This is a specimen of UNDERWO
DISTINCTIVE ELITE Type
10 PITCH 12345678

This is a specimen of
UNDERWOOD WIDE ELITE Type
10 PITCH 1234567890

THIS IS A SPECIMEN OF
UNDERWOOD PICA GOTHIC CHECK
PERFORATING TYPE
10 PITCH 1234567890

This is a specimen of
Underwood Old English
Type 8 Pitch 1234567890

This is a specimen of
UNDERWOOD WIDE VICTORIA
8 PITCH 123456789

This is a specimen of
UNDERWOOD GREAT PRIMER
Type 8 PITCH
1234567890

This is a specimen
of Underwood
GIANT PRIMER type
6 Pitch 123456789

This is a specimen of Underwood
ELITE STYMIE UNIT SPACE TYPE
12 PITCH 1234567890

THIS IS A SPECIMEN
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GOTHIC TYPE 6 PITCH
1234567890

This is a specimen
of Underwood
BULLETIN type
6 Pitch 1234567890

THIS IS A SPECIMEN
OF UNDERWOOD EXTRA
LARGE GOTHIC TYPE
6 PITCH 1234567890

THIS IS A SPECIMEN OF UNDERWO
PICA GOTHIC TYPE
10 PITCH 12345678

THIS IS A SPECIMEN OF UNDERWO
MEDIUM ROMAN GOTHIC TYPE
10 PITCH 12345678

This is a specimen of
UNDERWOOD ELITE VICTORIA Type
12 PITCH 1234567890

This is a specimen of Underwood ELITE
ITALIC type 12 Pitch
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This is a specimen of UNDERWOOD
MICROTYPE 12 PITCH
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or
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This is a specimen of
UNDERWOOD DISTINCTIVE ELITE Type
12 PITCH 1234567890

THIS IS A SPECIMEN OF UNDERWOOD
ELITE GOTHIC TYPE 12 PITCH
1234567890

THIS IS A SPECIMEN OF UNDERWOOD
CONDENSED ELITE GOTHIC TYPE
12 PITCH 234567890

This is a specimen of UNDERWOOD
ELITE GOTHIC HEAVY FACE Type
12 PITCH 1234567890

This is a specimen of
Underwood CONDENSED MICROTYPE
16 Pitch 1234567890
Also available 1234567890

This is a specimen of UNDERWOOD SMALL GOTHIC Type
16 PITCH 1234567890

THIS IS A SPECIMEN OF
UNDERWOOD CONDENSED ELITE GOTHIC TYPE 16 PITCH
1234567890 ALSO AVAILABLE 1234567890

This is a specimen of
UNDERWOOD LIBRARY GOTHIC
type 9 PITCH
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THIS IS A SPECIMEN OF
UNDERWOOD CONDENSED ITALIC
TYPE 9 PITCH 1234567890

OLIVETTI STYMIE HEAVY FACE 10 Pitch

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OLIVETTI UNIVERSAL PICA 10 Pitch 6 lines to an inch

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1908-1958

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Notes Toward the History of a Factory

Adriano Olivetti was appointed Director General of the company in 1933, during the presidency of his father, Camillo Olivetti, and in 1938 he himself became President. In the following pages he describes the beginnings, development and aims of the company.

Long before it was theory, the Community was life. My idea of the Community system was not a sudden inspiration, but developed gradually over a period of twenty years' work.

During my early experiences, while I was studying problems of industrial organization, I learned that man and machine were two hostile elements that needed to be reconciled. I understood the terrible monotony of repetitious movements before a press or a drill, but the approach to a solution for this kind of enslavement was long and difficult.

After social assistance and general working conditions in the factory were improved, I gradually realized that I had been aiming at the "optimum" and not the "maximum" of human energies. Labor had to have insight into the aims and purposes of industry, and to achieve this was no longer the responsibility of the "enlightened employer" but of the whole community.

As eldest son of the factory owner, I rapidly progressed in a career which others, although more gifted than I, could not follow. Beginning as a technician, I was soon an engineer, then a general director, and finally, president.

Through this experience, however, I became aware of the human and economic absurdity of patronage, the dangers of too rapid promotion, and the value of organized distribution of responsibility. It was only after ten or fifteen years that I felt I really understood the true nature and problems of the task before me.

From 1919 to 1924, during my years at the Polytechnic Institute, I witnessed the failure of the socialist revolution. I can still picture the great parade of two hundred thousand people on May Day, 1922, at Turin; but there was no one intellectually capable of channeling this great human impulse toward a better way of life. The question that remained in my mind was why the remarkable advances in business and technical organization did not seem to have their political counterparts.

When I set out for America in 1925, I hoped to learn the secrets of their administrative and organizational techniques. To be applicable to conditions in Italy, what I learned had to be adapted and transformed, for I faced at the age of twenty-five the complex problem of modernizing and enlarging an industry based on a semi-artisan system.

The guiding force that dominated the environment of the factory at Ivrea was my father. Possessing brilliant talents, my father might have been an outstanding economic planner, but he so distrusted the economic system of his times that despite his broader vocation he became an engineer. Intelligent and tenacious, he was a good engineer. He was of the type whose courageous initiative, self-sufficiency and dominating personality set the pace for the progress of modern Italian industry. His greatest ideal was independence, not being indebted to anyone, and not being subject to restrictions of any sort. Although he had powerful initiative, he was not reckless; he was extremely prudent, keeping the development of the firm in proportion to his own financial resources and organizational ability.

When I first entered the factory, its technical director was Domenico Burzio, a self-made man. Active, eclectic, versatile, this man was of a rare caliber. With my father he had run the factory for many years, guided by principles of tolerance and generosity. Later on, I was even better able to appreciate these human virtues.

Under their capable management there was an atmosphere of peace and harmony among the directors and the personnel. Many years later, I was to realize how difficult it is to reproduce and maintain such an atmosphere in a different historical situation, and in a business ten times as large.

A fundamental requisite in the expansion of the company was the introduction in all the various branches, of men with a high level of scientific training. I was forced to judge equipment and men in a practical way, and even heads of departments who had come up the ladder, and to whom the factory was greatly indebted, were gradually replaced by top graduates of the polytechnical school.

As we expanded, we organized new technical offices, research offices, production offices, control services and so on. Personnel in Ivrea rose from 580 in 1927 to 1,200 in 1934, and by 1951 numbered 5,000. However, one vital element in the organization seemed inadequate: a real community of interests.

My father before me, and his associate Burzio, had guided the workshop with an eye to the intelligence, but listening also to the wisdom of the heart. In those days they took on at the plant all the youths who had a reputation in the parish of being capable, hard workers. They used to set aside at least one hour a day for the employee who wanted a job for his wife or sister-in-law, or who needed a loan to buy furniture or pay off a debt; the employee who felt underrated by his section chief, wanted a transfer for reasons of health, or leave for a period of convalescence. For all of them, whenever possible, a remedy or a solution was found.

This personal touch, introduced by men of heart, was inevitably lost as the factory became larger. My father understood this long before I did. When Burzio died in 1932, my father created in his memory a fund which bears his name. This fund served to guarantee social security to the employee above and beyond the limited amount provided under Italian law. Thus, no one was forced to go into debt in order to pay for his father's or sister's funeral. No one had to forego a last farewell to his mother, who might be dying in a distant place. Mothers were furnished with beds, mattresses, coats, shoes for their children; and no one remained without wood in the winter. Orphans and widows received ample assistance; and no convalescent was ever forced to return to work before he was able.

In the process of reorganizing these services, I came to understand the intimate relationship between health assistance and social assistance. I realized how insensitive to such problems are those who have never had to face them; or those concerned only with the objectives of "efficiency" and "profit". I learned finally that such problems can only in part be dealt with by a "plan", however generous and well conceived, because voluntary action, as it was defined by Beveridge, cannot be underestimated.

When the solution of the major technical problems in the reorganization of the company gave me time, I began to study the relations between the lives of the employees and the factory.

The workmen's compensation scheme set up by the State worked badly. Over-centralization had resulted in disastrous inefficiency. An employee with tuberculosis, to get assistance, had to send his papers to a regional office. The regional office forwarded them to Rome, and it might be three months before approval was received. In those days medical treatment was less adequate; doctors were rotated every three months; many serious illnesses were not covered by the statutes; new treatments were not provided for; and the families of employees were not entitled to medical care.

To make up for these shortcomings, we set up our own health service. We built a home for convalescents, and a well-equipped infirmary with a doctor and a pediatrician on its permanent staff. Other specialists were called in for ambulatory patients and for home visits, and these facilities were provided not only for employees, but also for members of their families.

In addition, we established a nursery school for children from six months to six years of age, and summer camps in the mountains and at the seaside. Maternity leave of absence was extended to nine months with almost full pay. Finally, we planned and built modern housing settlements for our employees; and for those living in areas outside Ivrea, a transportation network was created.

A great deal of thought was given to educational facilities for workers' children. Schools were organized for technical and professional instruction, scholarships were established for outstanding students wishing to become technicians and engineers, and a comprehensive library was opened.

I had enormous difficulty in keeping these institutions from becoming instruments of paternalism and privilege, based on favoritism rather than on objective selection. Then the elective section of the Management Council brought up the question of the relations between company and employee as expressed in the social assistance program, and the result was the formulation of a "Welfare Paper", containing the following:

"The Olivetti Social Service places joint responsibilities on workers and management. Every worker in the company contributes to the operation of all its branches, and is therefore entitled to assistance, without there being any question of charity or personal concession. While the right to assistance, and the benefits, are the same for every employee, each case is judged on its merits, according to criteria as objective as possible—criteria which are constantly subject to study and revision."

This document represented an important step toward the autonomy of the welfare activities. By formalizing them, by making them a contractual obligation, we removed these activities from the realm of voluntary action. Because we have recognized the contractual nature of the new provisions, and the right of labor to participate in the wealth which it has helped to create, the social assistance which originated as voluntary action on the part of the employer has lost that stigma which is inherent even in the most well-meant charity.

The regulations governing the welfare program have a twofold aim: to establish a responsible administration with some guarantee of stability; and to develop higher standards of scientific objectivity.

While we were still working out the specific limits and powers involved in the program, it became apparent that the problem had to be seen in a broader perspective. Every action taken by the company had repercussions around us. After the establishment of our system of protection, education and assistance, I received many letters from workers in a nearby factory which was administered from a distance by a management that had not adopted a social policy in keeping with local needs. The letters all asked how a system of benefits such as ours could be extended to include the personnel of the neighboring factory.

I realized that every problem within the factory was directly related to the community outside, and could be solved only by considering internal and external factors together.

As a more specific example, when I wanted to recruit senior students at a local high school for work in the factory, I first had to convince the school authorities. I had to convince them that this co-operation with a private industry could be of benefit to the students in finding jobs most suitable to their abilities and temperaments.

Another problem concerned the acquisition of land for expansion of the factory. When we wanted to build new plants and houses for the workers, we found that the price of surrounding land and buildings suddenly rose exorbitantly. People who could well afford to part with a little land without altering their mode of life, kept their property; while small farmers who often found difficulty in resettling, sold their land.

If I had been able to show that the factory was a common advantage, and not merely a private interest, all these transfers of property, the broad plans, the bold experiments for decentralizing labor, would have been justified. But though there must have been a way of achieving this balance, it was not within my powers. A human and just authority was needed, capable of reconciling the interests of all. But in order to be efficient, this authority would have to be invested with great economic powers; it would have to do, in other words, in the interest of all, what I was trying to do in the interest of one factory. There could be only one solution: make the factory and its surroundings an economically solid entity. It was then that the idea of the Community was born.

A Community neither too large nor too small, geographically well defined, armed with authority, which would provide in all its activities the indispensable co-operation, efficiency, respect for human personality, culture and art, that by chance had been achieved in a part of a given region, in a single industry.

Later I set down on paper the theoretical ideal of such a community:

"The 'human measure' of a Community is determined and limited by the possibilities for personal contact open to each individual. A social organism is harmonious and efficient only when the men appointed to given tasks can fulfill them through direct contact..."

"All problems, in a Community, fall within simple and easily controlled limits. By using the human and natural means available, it is a simple matter to promote projects of long-term interest to the whole community, such as agricultural experiments, decentralized industries, children's clinics, building programs, study centers for architects and artists."

"The resolution of man's problems in life depends on an understanding on the part of the administrative authority of social relations, economic factors, technological developments, geographical aspects, cultural needs, artistic values, and finally—not least important—an understanding of historical and traditional elements."

"These problems can be resolved in a valid synthesis only when the administrative authority understands and assimilates them in their entirety. Such a synthesis, indispensable to the creation of a new civilization, is possible only in organized units of limited dimensions. The use of rapid means of transport and communication tends to diminish rather than to increase the understanding and appraisal of everyday life, which is revealed in a thousand meaningful details only to him who takes part, step by step, in the life that is reflected in the eyes of every man, woman and child..."

"When the Communities become reality, the sons of man will find the essential element of love for their native land, in the places where they spent their childhood; they will find the concrete element of human brotherhood in a solidarity of common interest and tradition."

"The fundamental structures of our present society do not create such unity of feeling; consequently they hinder the development of human solidarity."

So the concept of Community was developed, with its natural and human boundaries in my small native land, the Canavese region. The straight line of the Serra, the twisting course of the river Dora, the backdrop of the beloved mountains of Val d'Aosta, amid green meadows, the wheat fields, the closely worked vineyards encircling the towns through which I had passed once, ten times, hundreds of times.

These are the natural boundaries of a land which the faith and imagination of a group of men can hope to change from a closed provincial atmosphere to a place where factory, nature and life are brought into spiritual and actual unity, and may succeed in giving a new conception of dignity to a new conception of man.

The preceding pages were written more than seven years ago. Today, I find little to add to them, and almost nothing that I would change. In these intervening years the company has grown; by new construction and the hiring of several thousand new workers the factories in Ivrea have been practically doubled. The O. M. O. machine-tool factory, whose creation was Camillo Olivetti's labor of love, has a new spacious building at San Bernardo. In Agliè, a textile factory that had gone out of business was converted for the use of one of our production divisions, and has provided jobs for local workers and for hundreds of others from depressed areas of the region. At the same time, our company has sought to contribute to the industrialization of southern Italy, where new enterprises are badly needed to relieve the perennial problem of unemployment and marginal living conditions. At Pozzuoli, facing one of the most beautiful bays in the world, we built our factory. In its handsome functionalism, its carefully studied organization and its cultural and assistance services which equal those previously established in Ivrea, it bears out our aim of placing technology at the service of man. Along with the increase in our production, our sales organization has been extensively developed throughout the world. Our distribution network has been elaborated and strengthened, additional foreign allied companies have been created, new factories have been planned and set in operation in other parts of the world. The products of our organization, which now employs more than 24,000 people, vigorously compete in the world market. The creative talent of our designers and technicians has met the test of these years, and their new models have progressively replaced or supplemented the old ones. Better methods have been devised for this new production, and in experimental fields—such as electronics—the long and delicate phase of study and research has already been completed, and the problems of production are now being worked out.

I realize that some of the points I indicated seven years ago as stages in our effort for social progress in the factory and community have now been superseded. The working week in our factories has been reduced to five days, with no loss in wages. This was the first such reduction of working hours in Italy. It has become possible to guarantee full pay to women workers during the nine and a half months of their maternity leave. Supplementary payments augmenting government family allotments have helped large families considerably in balancing their budgets. The social service organization has adopted a supplementary pension plan, soon to be codified in detail, to provide for workers whose pensions do not cover their needs. The Social Relations Center has been set up to assist needy families, particularly the many migrants with children and old people who hopefully come from all parts of Italy, but who cannot all be absorbed by the factory. By the time this book is in print, the social assistance activities will be centered in a group of buildings housing all of the social services—educational, recreational and assistential. The new complex, standing opposite the factory in Ivrea, is visible evidence that the man who lives his working day in the factory does not shed his dignity when he puts on overalls. We have followed, during these years, the path marked out by my father. It has been my duty to continue in the same direction, taking as he did inspiration from the spirit of brotherhood and freedom. Though assailed in our time by brutal disorder our heritage of reason and spiritual values has remained a potent force in the world and society. What success we have had lies in the strict code on which this factory was founded, a code calling for scientific standards in research and planning, a commercial organization directed toward public service, a fair price system, the best and most modern machines and methods, the industrious and intelligent co-operation of all the members of the organization.

As I have said, when I started working I realized that labor had to participate in the aims of the factory. This realization implied the answer to some of the fundamental questions in my life, questions dramatically repeated in moments of doubt and uncertainty, questions profoundly decisive for the faith they presuppose and the obligations they denote: Can industry have aims? Are these aims simply to be found in the index of profits, or is there not also an ideal, a destiny and vocation in the life of the factory? I had occasion to speak of this in 1947, when, after the grievous years of conflict, we resumed the awarding of Gold Pins to employees with 25 years of service. This was the first time that Camillo Olivetti was not there, presiding over the long tables during the ceremony whose meaning and ritual he had established. In the darkness of the early post-war period, the future bristled with new problems, demanding urgent and complicated decisions. The factory was also involved in the struggle between contending values, ideologies and interests that was being waged outside its gates.

At that ceremony I tried to formulate the problem of a world torn between two concepts of life and society. I said: "According to one concept, spiritual values are more important than material ones, and by trusting in authority and order pragmatic problems also can be resolved. The other concept, though not denying the values of the spirit, has it that the affirmation of inexorable material rights will lead to a more just and human society. We respect these two opinions, but are concerned by the bitterness of the struggle and the tragic consequences it could have. For us, however, there is only one direction, a single duty: to consider everything we do in the light of the tradition we have established, and to resolve each problem in terms of greater justice and truth, greater generosity and tolerance. Times change, things change, and we cannot linger over the formulas and institutions of the past, except to take from them what is still valid for us. The future is before us. We can and we will perfect the educational and social facilities we now possess. For example, an independent school is needed, one that is separate from our production activities; we also need better equipped summer camps, and other improvements. It is not enough, however, to contemplate the expansion of existing facilities and improvements in techniques, we must progressively adapt our institutions and forms to the changing needs of the economy and society."

Spiritual independence, steadfast reliance on universal principles, a collective awareness of our duties and our possibilities of fulfilling the obligations created by an ever growing business—all these are fundamental elements in the history of our factory, its inalienable heritage and its way of life.

The expression "to make work human" may seem like mere rhetoric when printed in a newspaper or spoken from a platform. It is filled with a hard, living truth, however, for those whose lot it has been to have a part in changing the destiny of thousands of people, each with his own dignity, his own light and his own vocation. We have accordingly sought creative means of mediation in the world of the working man, going beyond the unfruitful patterns both of the class struggle (which is incompatible with the Christian virtue of charity) and of generic, categorical solidarity (which may work against justice); and we found these means in culture and the community. By strict respect for cultural values at all levels of factory life we have favored the higher aspirations of the human spirit, homage to beauty, the warmth of tolerance and the clear supremacy of knowledge.

Through the ideal of a real community we have made considerable progress in building up those facilities and activities which create an organic system of bonds between the factory and the Canavese region. We have attempted to bring the man closer to his rightful destiny, his labor closer to its just reward; and through real co-operation, our progress has been tangible.

In this way the factory in Ivrea, though operating within a competitive economic system and abiding by its rules, is concerned with the material, cultural and social betterment of the place where it is situated. The factory and the region around it are finding their direction toward a new kind of community, where there is a general identity of aims among the people who enact its history day by day, as they work to secure a future and a life more worthy to be lived.

The social endeavor of the Ivrea factory, an endeavor which has not yet been entirely achieved, is inspired by a simple idea: the creation of a new kind of enterprise going beyond socialism and capitalism. The times urgently call for a new approach, since the schematic solutions offered by the two contending sides of the social question cannot resolve the problems of man in modern society.

We are well aware that no effort in this sense can be valid or lasting if it is not directed toward educating and uplifting the human spirit, that any such effort will be in vain if our common heritage, respect for truth and learning, for the light of the intellect and of intelligence, is not made available to all in generous abundance.

At the same time, it must be clear that for us these goals, though vital, are no substitute for bread or wine or fuel. In order to obtain real freedom, we must at the same time go on striving for a higher wage scale, and for economic conditions far above minimum subsistence. I consider this double endeavor, material and spiritual, for the future of the factory we love, the highest obligation I can assume and, indeed, my reason for being. The light of truth, my father used to say to me, shines only in our deeds, not in our words.

July, 1958

Adriano Olivetti

Camillo Olivetti

«I believe the 19th century was one of high intellectual values and will leave an indelible impression on the history of the world . . .» Camillo Olivetti's words, spoken 32 years ago, answered the adverse criticism then leveled at the century of their birth by a generation infatuated with the future. Today, with the benefit of historical perspective, the common opinion coincides with these words. The 19th century, like few others in history, was marked by new currents of vitality, and passions and dissensions still unresolved. It is the century of national revival for many countries; of the rush toward industrialization, with its social consequences and socialist reactions; of the development of communications; and of the many techniques and theories underlying such progress as we now enjoy.

The men born in the second half of that century had a restlessness perhaps more productive than ours, an energy of spirit not always found in our flurry of activity. In these men of great inner capacity, yet contradictory and divided, the nationalistic spirit of the wars for independence persisted, but with it grew a vague, insistent aspiration toward internationalism. When they had attained national unity, they found that the nation was divided into classes. Nourished by Romantic idealism, they were easily ensnared by the apparent irrefutability of positivism and naturalism. Their faith in universal progress and equality was not always borne out in their colonial enterprises. Social injustice —where it failed to create political awareness – inclined them toward a sincere, if sterile, pity for the underprivileged. All these stimuli, which were felt particularly by the middle-class, aroused in the best of them a desire to do something, to expand; a fever to build and to set things in motion, as if they had realized for the first time the dimensions of society and the world, and of the resources at their command. Along with the scientists, the philosophers and the artists, an increasing number of technically-minded entrepreneurs appeared, who provided the model for a new type of social character, or *hero*—a subject suited to a Balzac or, better, to a Dreiser. As once the captain of an army fought his way to the fore, to the forefront now came the captain of industry, the founder of «concerns», whose names are still proudly inscribed over the entrances of the great modern factories.

The last decades of the 19^{th} century saw the rise of the fabulous fortunes of Morgan, Rockefeller, Carnegie and—a few years later—the genius of Henry Ford. In Italy there appeared men like Pirelli, Tosi, Riva, Falck, and Agnelli.

Camillo Olivetti was one of these heroes, dominated by a creative idea, who was dramatically set among the contrasts and contradictions of the age. But he stands out, as much in greatness of spirit as in concrete works, among the other courageous and fortunate industrialists of the time, because of his singular character, his inner richness, his strict morality and, finally, his political consistency, which was proudly manifested all during the twenty years of Fascism. Other men felt that they had to protect their business interests by paying homage to the regime, but not Camillo Olivetti. He remained the friend and admirer of the great Italian socialists, Filippo Turati and Oddino Morgari; backed and contributed to Turin's anti-Fascist weekly *Tempi Nuovi;* and wrote a pamphlet advocating bold tax reform and openly condemning the Fascist government.

His memory survives not only in the name of the company which he established and directed toward success. His personality lingers in the minds of those who knew him and, like a living presence, creates an atmosphere, an air that is still breathed in his factories. Around his memory, local, often fanciful, legends have begun to gather, but if one penetrates through these natural distortions, the man himself emerges on a vaster scale than that of his image as love and gratitude recreate it.

Most people who remember him now knew him in his old or late middle age, and his portraits depict him as a grand old man: heavy, not tall; with a great round head; a spreading, patriarchal white beard; and his eyes blue, narrow and piercing. It is an image that seems taken from a history book; even if you know nothing about him, you feel at once that he is an outstanding personality. His surviving associates add that he made this same impression of authority, of mental and moral energy, at first meeting. They say, too, that he was a singular character. He had frequent, sudden changes of temper; his mild voice had an edge of authoritative impatience. He made up his mind quickly, and sometimes changed it quickly. Within a brief period of time, he could heap praise and blame on the same person. Men of vivid imagination who are proud of their work and are possessed by it, are often mercurial, but there are few who also recognize the dignity and importance of every human being, and are restrained by that sense of proportion.

In their ready nostalgia for their youth and for things past, the old-timers of the factory describe Camillo Olivetti's moods, his rapid changes from severity to geniality. They praise his simple manners or recall his absent-mindedness and his odd dress: the worn-out hat; the long, full jackets; and the rug that he sometimes threw around his shoulders, instead of a coat, as memorable as Garibaldi's poncho. In short, they tend to depict only the picturesque sides of him that most vividly struck their fantasy. These attitudes and peculiarities reveal the outer restlessness of a strong personality, but fail to illuminate sufficiently the solidity of his achievement and the greatness of his spirit: a greatness which, in this case, is not a mere rhetorical term, but the measurement of a human dimension.

The story of industry—and not only Italian industry—cherishes the long-popular tradition of the self-made man. In pioneering ages there is often a happy and easy connection between boldness and good fortune. Such periods abound in extraordinary coincidence between a man's capabilities and the requirements of a given place at a given moment. Apparently accidental, great discoveries and fortunes in reality are made where the terrain is ready and waiting. Camillo Olivetti, like few others of his generation (among them, G. B. Pirelli), falls outside this tradition. He came from a well-to-do middle-class family, his father being a farmer and small real-estate broker in the Canavese region of Piedmont. Camillo had a strict schooling and attended the Politecnico of Turin, where he was the best student of Galileo Ferraris, who had just become famous as the discoverer of the magnetic field. In 1891, Camillo took his degree in the new science of electrical engineering, a choice affecting his whole future.

Those were years when inventors and discoverers, scientists and engineers represented a little aristocracy with a revolutionary assignment. The instruments we use today were, in Camillo's student days, freshly created: the telephone dates from 1876, electricity's first practical uses emerged in 1880, Herz discovered electromagnetic waves in 1886, Röntgen's X rays date from 1887. The world looked to its mechanical and electrical engineers as today it looks to its nuclear physicists.

In 1892, a year after taking his degree, the 26-year-old Camillo Olivetti was invited by Ferraris to accompany him to America, where they met Edison, Maxwell and Steinmetz, and where for two years, he was an instructor in electrical engineering at Stanford University, California.

When, enriched by this experience, Camillo returned to Italy, at least three paths were open to him: a university career, professional practice and research, or the adventure of industry. His choice was determined by his restlessness, his imagination and, indeed, his creative vocation. The vocation was perhaps at first unsure, but his studies, his American experiences and his faith in the technical and commercial possibilities of his own country led him to venture on his own enterprise. In 1896, showing his independence of judgement, Camillo chose Ivrea, rather than one of the industrial centers, as the place to establish a small plant, more for experiment than for production. His partners were Dino Gatta and Michele Ferrero, with whom he had previously run a small commercial agency, and together they developed the enterprise into Italy's first factory for electrical precision instruments. The factory was called C. G. S.—initials standing for the principal units of measurement: centimeter, gram, second.

In 1904 the factory was transferred to Milan, the center of Italian commerce and industry. It had an immediate success, and is still today the largest establishment of its kind in the country. As the undertaking prospered, Camillo Olivetti began to fill his pocket notebooks with drawings and notes for another venture; and after only three years, he left the management of C. G. S. to Gatta, and returned to Ivrea to develop his new idea.

In 1907 Ivrea was like an overgrown village. A local textile industry had failed, and the town lived mainly by handicrafts and by trade with the fertile farming country around it. It was a pleasant city, however, lying between the river Dora and the foothills, and dominated by its famous four-towered castle, a grand relic of the past unconnected with the contemporary mediocrity. With its steep, winding streets and the little houses of the gentry in the upper town, Ivrea evoked an atmosphere of *Bovarisme,* of silent conflicts, sullen rebelliousness and discreet love affairs, as in Giacosa's plays, Gotta's novels and Gozzano's verse. Certainly it seemed ill-suited to embrace the revolutionary ventures of an engineer who had been living in the great world of the United States and Milan, and who, it was rumored, intended to start making a machine that nobody seemed to feel the need for. It would be, they all said in Ivrea, a disastrous undertaking. This was the tenor of the opinions and advice Camillo received from his friends and relatives, when he renovated the former C. G. S. plant and, with his close associate Domenico Burzio, began to study, design and cast the parts for his first typewriter.

He was not alone in his determination, however. Burzio and a few workers enthusiastically seconded his plan, and he had the whole-hearted support of his wife, Luisa.

They had been married in 1899, eight years before, in Ivrea, where Luisa Revel, daughter of a Waldensian pastor, was born. The marriage was a great sustaining force in Camillo's life, and created the special moral climate in which the children and the Olivetti industry grew up. Luisa Revel's rigorous Waldensian morality and her strict Gospel Christianity admirably complemented Camillo's Jewish Old Testament piety and vision. Her gentle nature mitigated Camillo's impulsiveness; her Christian prudence tempered Camillo's Messianic enthusiasm. She knew when it was right to placate, restrain or encourage him. From the beginning their marriage was marked by an immediacy of understanding. Though they were both young people of the same small town, they had never met. Undoubtedly the Waldensian pastor's daughter, like all the other girls of the town, knew who Camillo was. The girls certainly talked together about the young engineer with the absent-minded air who never took any notice of them—the only gentleman of the town who persisted in riding a bicycle when all the other prosperous people had fine horses and elegant carriages. In fact, he was riding by on his bicycle one day, when the astonished Luisa saw him dismount and come towards her. With no other preamble but the doffing of his hat, he asked her whether she would be his wife.

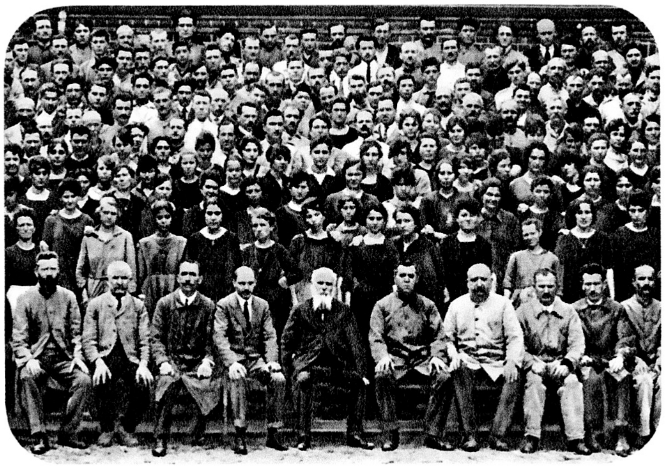
The episode reveals the character and temperament of the man. Impetuous but sure in his judgments, he followed his impulses, and rarely had cause to regret them. It was with the same sureness of decision that Camillo in later life chose his associates.

Giuseppe Pero, who has held the highest managerial positions in the Olivetti company for nearly forty years, recalls that he was the subject of one of these rapid decisions. Pero was the youthful secretary of the Italian Chamber of Commerce in Brussels, and Olivetti had come to him for information about exhibiting in the International Fair that was to be held there in that year, 1920. Pero answered the questions uneffusively and to the point. Olivetti said goodbye, and went downstairs. A moment later he was back, offering him a job: «You would do well to leave this place. I can offer you a good position in my business».

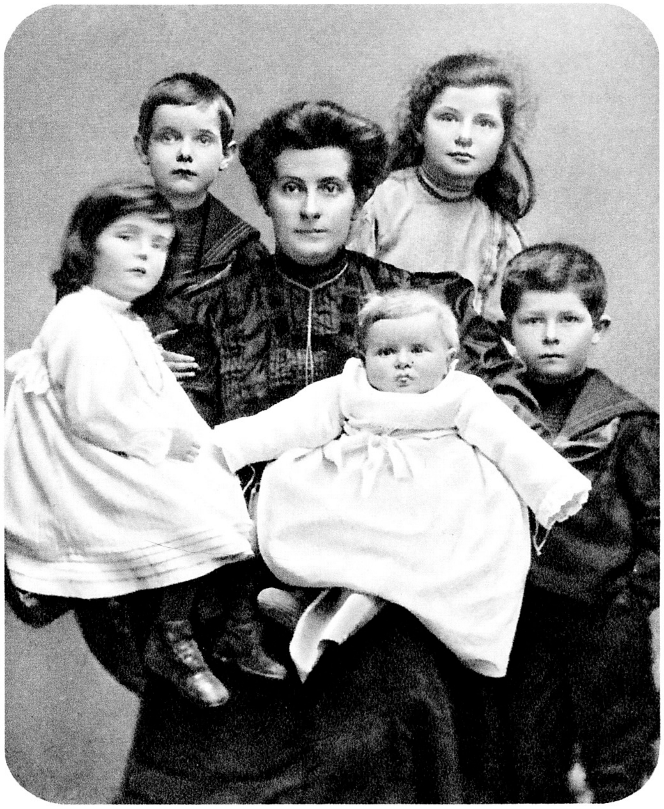
The idea of manufacturing typewriters had been in Camillo Olivetti's mind for some time. It may have occurred to him on his first trip to the United States, or during the time before C. G. S., when his commercial agency represented, among other products, the Williams machine. In Italy, at the turn of the century, however, the few examples of American-made machines were a curiosity and a luxury. In fact, the quill pen was still more popular than the penholder and steel nib. While in other countries typewriters and lady typists were common, and the object of popular wit, in Italy they were still regarded with distrust. Little had changed in the half century since the Novara lawyer, Giuseppe Ravizza, had invented the "clerk's clavichord". The first practical example of a mechanical writing machine, Ravizza's invention met with general indifference. The times were not

Camillo Olivetti, ca. 1875

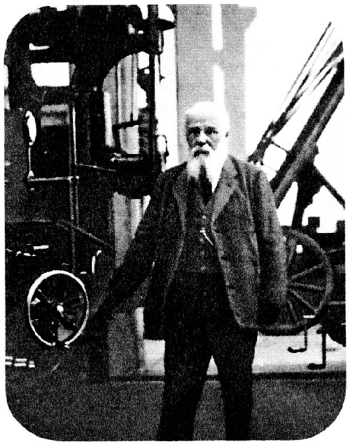
Camillo Olivetti (right) and his friends Ferrero and Gatta.



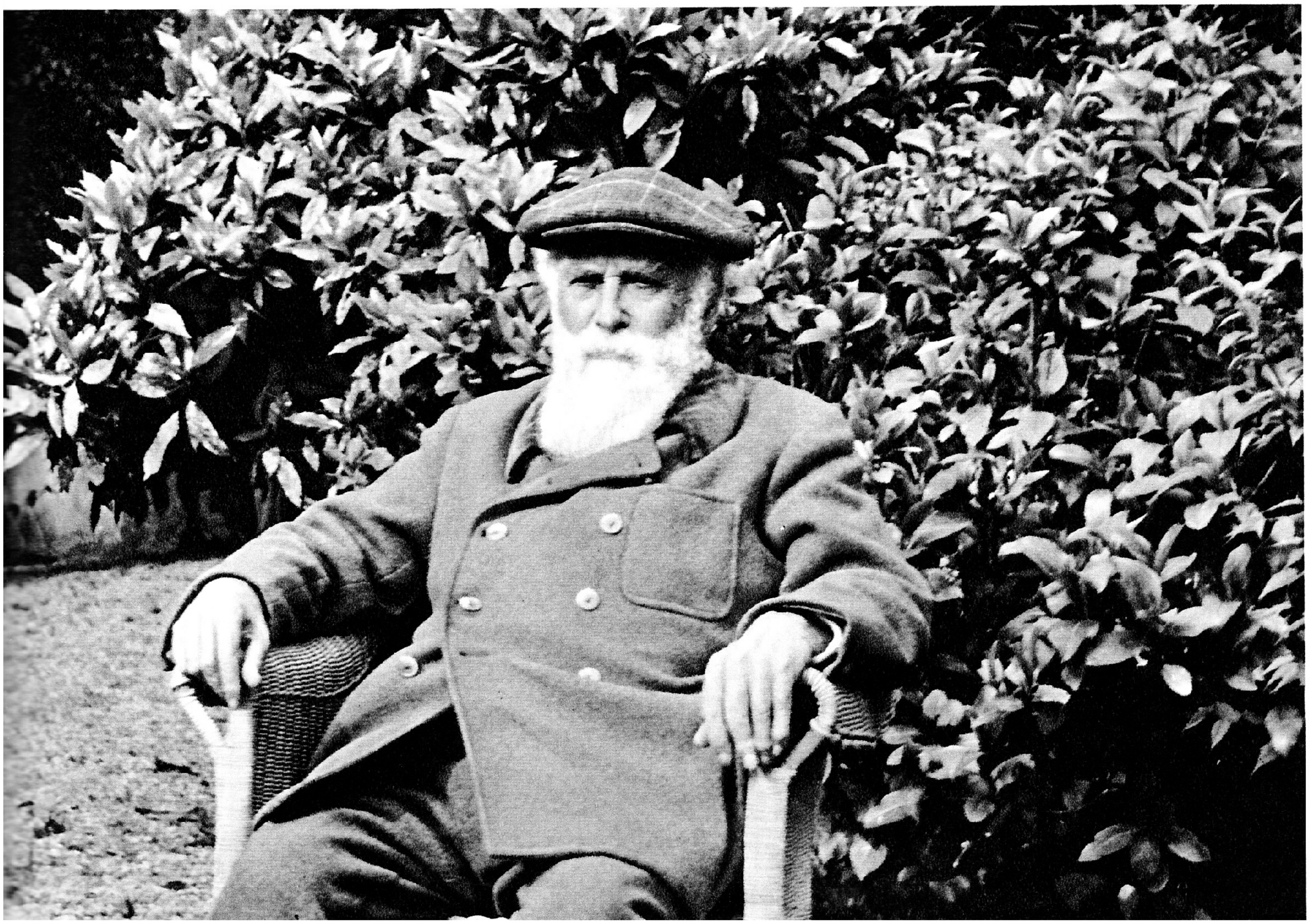
With the factory staff, 1920.



Luisa Revel, Camillo Olivetti's wife, with five of their children.



The first plant. Camillo Olivetti in the factory.
With his assistants. In one of his last photographs.



ripe for this innovation, and Ravizza himself was too much of a dilettante and a romantic to find a market for his creation. Camillo's grasp of the spirit of his own times allowed him to select the right moment to launch his invention, and his experiences in America showed him that it was inevitable for mass production to replace artisan ingenuity in the field he was entering.

The little red-brick factory stood in the midst of empty fields, more than half a mile from the town. The view included farm-houses, the green hill of Monte Navale and the abandoned convent of San Bernardino, which was later to become Camillo's home. Only the occasional whistle of the trains arriving at the nearby station represented the outside world of industry and commerce. In Turin, the nearest big city, the Fiat plant, established ten years earlier, had 50 workers. Camillo Olivetti had four inexperienced boys, whom he patiently trained, beginning with how to hold a file. In the evenings, when the working day was over, he gave them lessons in mechanics and arithmetic. The foreman was Domenico Burzio, the former blacksmith who had worked with him for thirteen years.

Referring to his experience in training workmen, Camillo wrote: "It taught me something that my later experience has confirmed; namely, that study can help only those who are intelligent enough to assimilate what they are studying, and that uneducated people, if they are quick, and eager to learn, can succeed better than people with much more schooling, who are less intelligent and eager."

Two years went by before construction of the first typewriter, the M 1, could be undertaken.

"My preliminary studies took more than two years, and it was only in the spring of 1909, after some friends and I had formed the Ing. C. Olivetti company and I had made another trip to the United States to get an idea of how similar industries functioned there, that our plant really began to operate."

Camillo re-studied the technical problem of the typewriter, rejecting the idea of copying existing models. He wanted a new machine completely designed by himself in every detail.

The characteristic desire to do things his own way was later evident also in his commercial dealings. He disliked having debts, even in the form of bank loans, and had a horror of promissory notes. Although he became expert in economic questions, his attitude towards money remained ingenuous, scrupulous and unmaterialistic. He was not a financier, but a builder.

The first typewriters designed and constructed by Olivetti were shown to the public at the Turin Exhibition in 1911. There were only two examples to satisfy the curiosity of visitors to the Hall of Journalism. In the Olivetti company's display, Camillo had also set up some of the machine tools that made the main parts of the M 1. As an industrial technician, he was perhaps prouder of demonstrating the ingenuity and modernity of his methods than of showing the public his finished product.

This rather modest introduction to the public, after three years of preparation, started the M 1 on its way to success. In the same year it received official sanction, winning the Ministry of the Navy's competition for an order of one hundred machines.

"In December 1911," Camillo wrote, "we had the unhoped-for satisfaction of winning the competition... and from that moment began the truly marvelous progress of our industry".

A little more than a year later, another official order was received from the government postal system.

The years between 1911 and 1914, a time of high prosperity for Italy, were Camillo's fullest and most fruitful years. There was much to do, now that the M 1 had made a name for itself and could be manufactured by the hundreds. He had to find new financing, train new workmen, lay the foundations of his sales organization. His first branch office was opened in Milan in 1912; others soon followed in Genoa, Rome and Naples.

In the beginning it would have been easier for Olivetti to let a concessionary agent handle sales for him, but he decided to have his own direct-sales organization, and by considerable effort, traveling ceaselessly, he succeeded in doing so. He himself called on customers, and at times accompanied the delivery boy carrying a typewriter, or helped the mechanic on a repair job. His interest in every detail of production and sales was complemented by his personal relations with each of his employees. He knew the work and he knew the men, who respected him for his experience and skill. Camillo's intimacy with his workmen was unusual for Italy, but the men found it only natural for him to join in their celebrations on May Day.

When many factories were temporarily taken over by the workers, just after the first

World War, the men at the Olivetti plant decided that their best interests were served by Camillo, and he remained in charge. What might be described as a kindly paternalism, seen from the viewpoint of today's large impersonal industrial organization, was then a personal relationship in which the workers' esteem for Olivetti was based on his love for work performed as if it were an art. The economic results of the work interested him less, and indeed he was indifferent to money in itself, as if he were a little afraid of it. Certainly, his ideas of socialism did not stem so much from an economic view of society as from a moralistic vein. He was not a Marxist, and did not think of society in terms of class conflict; he was a bourgeois and an industrialist, and as such it would not have occurred to him to condemn the capitalist system.

"The ethical basis of the capitalist economy," he wrote in 1933, "lies in its exaltation of labor and savings." Savings, not gigantic accumulations of wealth; earnings, not blind exploitation: these form the 'ethical basis' of Camillo Olivetti's socialism.

"Proper savings," he said, "are those derived only from work, the *single* possible exception being that sons may be allowed to enjoy the benefits of their fathers' savings, in the interest of continuing the species." His feeling for social justice is warmly expressed in his pamphlet on tax reform, which has been referred to earlier: "In Italy, where the dominating class, or clique rather, is composed of professional men, the white-collar group, that part of the middle class that lives off income, and a few industrialists and politicians, the attempt will be made—as it always has been in the past—to throw the entire tax burden on the working class . . . There are those however who look forward, as I do, to a time when the greater share of the fruits of labor will go to those who have labored usefully . . ."

Camillo Olivetti never had any doubts concerning the worker's right to share in the profits, and it was on this basis that he understood co-operation between the classes, a conciliation whose ethical premises he found, with a somewhat bitter shrewdness, in the spirit of Christianity:

"'Forgive us our debts as we forgive our debtors,' goes an ancient prayer to which all believers can subscribe. We do not ask for total forgiveness, for this would require that all men have the Christian spirit one hundred percent—and this is too much to ask. But if men had fifty percent of this spirit, it might then be possible to insist that the interest rate on capital be low enough so that even the working man could develop his capacities. As is often the case, following moral law in this instance would also have an immediate practical value."

In 1914, on the eve of the war in Europe, the plant had slightly more than two hundred employees. Camillo knew each of them, and relations were so close that his plans for the industry often took on the character of group decisions, as in the case of reducing production of the M 1 in order to make the gun parts, dirigible valves, fuses, and airplane magnetoes that Italy needed at the time. The magnetoes, constructed according to Camillo's own design, were particularly successful, but all of the factory's war material was produced with scrupulous care. Later, Camillo was able to say: "Unlike other industries, ours did not make excessive profits from the war. We had, however, the satisfaction of serving our country honorably and faithfully."

Honest workmanship and honest dealing were a moral principle with Camillo, and he defended this principle without regard to profit. Sales were secondary to him when he was in doubt about what he was offering. He would dissuade a customer from buying a machine, if an improvement occurred to him while demonstrating it, and after discovering that production costs had been less than anticipated, he insisted on returning part of the price to a customer who had bought a machine tool.

The company grew steadily through the years after the first World War, and came through the Depression in good shape. As new markets were opened and production expanded, the factory became too big for the old intimate relationship between employer and workers. Now there were too many for him to know them all by name. At the same time, his eldest son, Adriano, had grown up and was full of new ideas for the business. Camillo recognized that the first phase of the company's life was drawing to a close, and encouraged Adriano's plans for reorganization. He watched with satisfaction as his own foresighted provisions for social assistance and insurance were extended, and took part in ensuring that wages and working conditions were kept at their optimum under the new production systems. He understood and approved the new approach to advertising, reflecting the progressive currents in contemporary art. His own work had begun in the midst of Italy's revolutionary industrialization at the end of the 19th century, and he could readily grasp the significance for his industry of the new managerial revolution. Aware that the company's new policy, inspired by current theories concerning the scientific organization of production, called for as much talent, energy and dedication as had been required to reach this point, he knew that it was time for a change. Bold in starting his enterprise, he was wise in turning over its management to others when he felt that changed conditions and his age made it advisable. For many years still, however, he remained the guardian angel of the factory, stimulating, suggesting, offering the benefit of his experience. Always restless in spirit, despite ailments that prematurely aged him, he remained active, and at his O. M. O. plant, with a group of his old workmen, he continued to invent new models and to build new machines. At the same time he began again to read and write about economics, politics, religion. It was a bitter time, with racism, exaggerated nationalism and the forces of destruction pulling down a whole world in which Camillo Olivetti had believed, but he had the consolation at the end of his life of continuing to fulfil his true vocation, that of an industrial humanist.

The year 1943 was the most dramatic in Italy's recent history. Camillo had to take refuge in the country near Biella. Then came the forty-five days of the Badoglio government, when Italians, unused to free debate, illuded themselves that their momentary freedom of speech, before the swift Nazi repression that followed, meant that democracy had been restored definitively. The final fight for freedom was still ahead, and Camillo cautioned the factory committee which came to call on him in August of that year: «We are not yet free. Prepare to defend yourselves. Be armed, and hide your arms. Be strong».

He died on the fourth of December of the same year. The day he was buried it was raining; but from Ivrea, from the neighboring towns, and from every point of the Canavese region, the workers got to the funeral. They came by any means they could, most of them on bicycles, regardless of fatigue and danger. The Nazis were slaughtering Partisans and threatening whole towns with reprisals. The little Jewish cemetery in Biella could have become the scene of a massacre. Yet it was filled that day with silent bareheaded men standing in the rain.

Camillo Olivetti's First Associate: Domenico Burzio

On the outskirts of Ivrea, in the San Grato area, there is a group of houses known as the *Cantôn d'ji Bürs,* the canton of the Burzios. Domenico Burzio was born here in 1876.

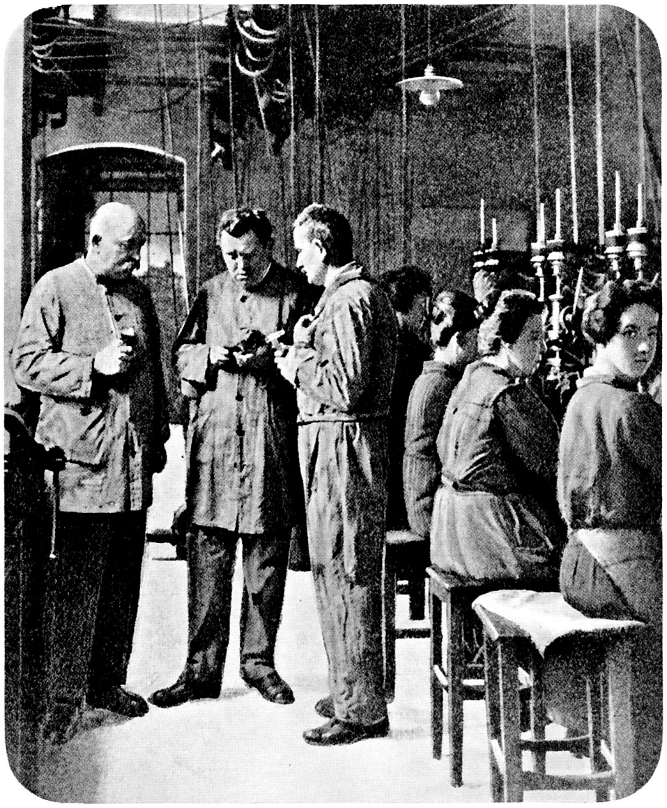
His father was a blacksmith, and when Domenico's grade-school teacher decided that he was not cut out for studying, the thirteen-year-old boy went to work in the smithy. He started at the bellows in one of the forges where they made wine-presses, worked there for six years and probably would have remained a smith all his life if, in 1895, he had not turned to Camillo Olivetti. A few years before, the boy had taken the course in electrical techniques given by Olivetti who hoped to open the door of opportunity to many young men of the Canavese region. Now Camillo Olivetti was on the point of going to America, but he told the young Burzio that on his return he would engage him, if in the meantime the boy obtained his certificate as a furnace man. After passing this test, Burzio was taken into the C. G. S. company in 1896, though he did not stay a furnace man for long. In a few months he was made foreman of the workmen engaged in making electrical precision instruments. His capacities as leader, technician and organizer—which Olivetti had sensed—were fully revealed at the time of the transfer of the plant from Ivrea to Milan. It was Burzio who organized and supervised the removal of all the machines, equipment and personnel to the new plant.

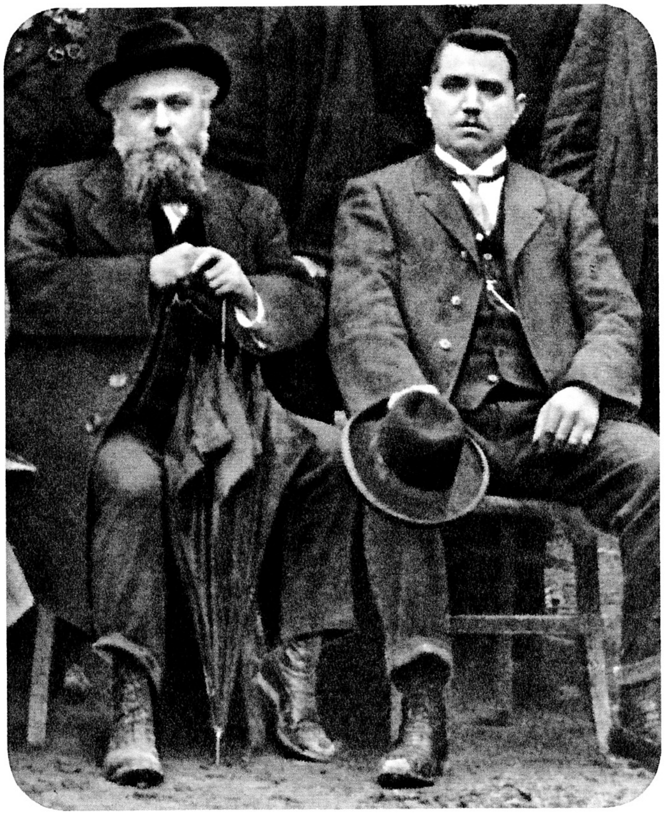
In Milan, Burzio was made plant manager, and also resumed his studies. In 1907 the Umanitaria institute awarded him a diploma for his excellent record in electrical techniques. He went back to Ivrea, in 1909, as technical director of the factory where Camillo had begun to manufacture typewriters. During the first World War, Domenico Burzio ran the plant, studied new methods and machines, and at the same time acquired an extensive knowledge of design and technology. In the factory he had the reputation for being strict, and was no less stern in his private life. He was a Piedmontese of the old school: exacting and rigid, but also generous. To this day there are many savings accounts in the banks of Ivrea which were first opened by Burzio for needy workers, in their own names. In his office he saw anyone who had problems to discuss. He would help those who had financial troubles to budget their earnings, personally going over their accounts and showing them how to save and pay off their debts. This friendly generosity won him the affection of the workmen, as his uprightness of character gained their respect.

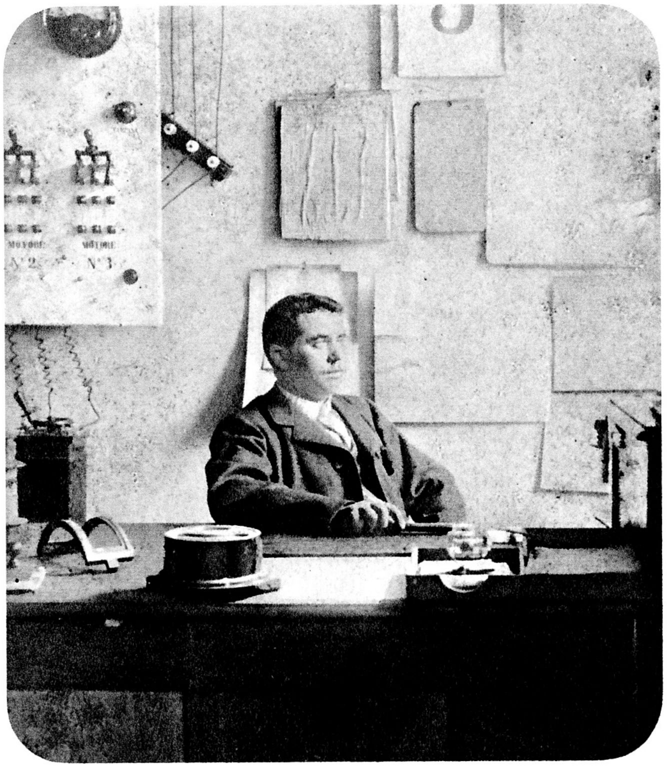
In Ivrea, Burzio with his wife and three daughters lived only a few steps from the factory. He had no interests or hobbies outside his work, to which he devoted most of his day and sometimes part of the night as well. When he was not at work, his time was spent within his close family circle. On Sundays, he would take his invalid daughter, crippled by a fall, in her wheelchair to see his mother in San Grato.

In the attic of his house Domenico Burzio went on studying and designing. These activities were intensified, in spite of failing health, after he came home from a journey to the United States taken with Adriano Olivetti in the fall and winter of 1925. During the visit he saw many important American industries and kept a diary of brief but careful technical notes: "Sewing, or rather hemming machines: Hartford, 8/10/25. They manufacture a small hemming machine, well finished and accurate; plant not big but orderly, and very clean throughout; each machine has screen to catch oil and shavings. Tools clean and neat, all kept in order. Careful processing; assembly line, but not on large scale. Construct up to six machines a day. They also make needles for knitting machines, but did not show us the machines. They run in the gears on the machines for about eight hours after tempering . . . I saw a small simple lathe, like ours, with automatic equipment for cutting the square parts of the letters—very simple and quick." These practical observations, set down with sketches and designs in a precise, fluent hand, fill nearly two hundred notebook pages.

In the United States, Domenico Burzio fell ill and was to remain in precarious health for the rest of his life. In 1932 he underwent a major operation in the hospital of Ivrea, and the morning of March 22nd he died of an embolism. At the factory the sirens sounded and work stopped; all that afternoon hundreds of working people filed past Burzio's bier in the villa he had built between the factory and the foundry a few years before. Camillo Olivetti stood for a long time before the body of Domenico Burzio. The old man's valedictory was: "I had one friend and now I've lost him." Their friendship, based on mutual respect for each other's work, was seldom expressed in words or gestures, but grew and lived as a tacit understanding. Camillo rarely displayed his satisfaction over the brilliant devices and machines Burzio quietly developed by himself. Only when some visitors came to the plant, Olivetti would point out the machines, demonstrate their use and say with pride: "This machine was made by Domenico Burzio,



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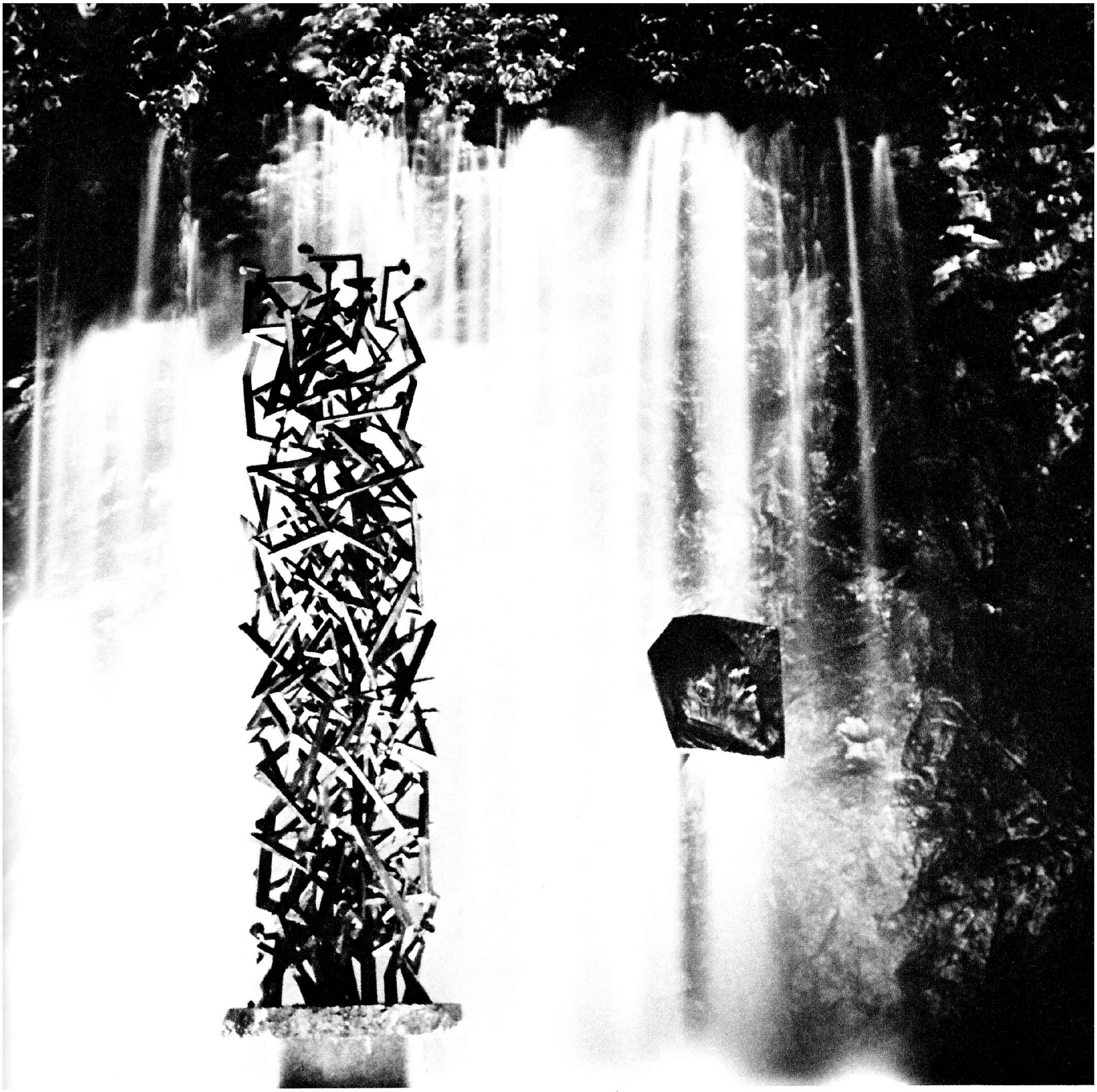
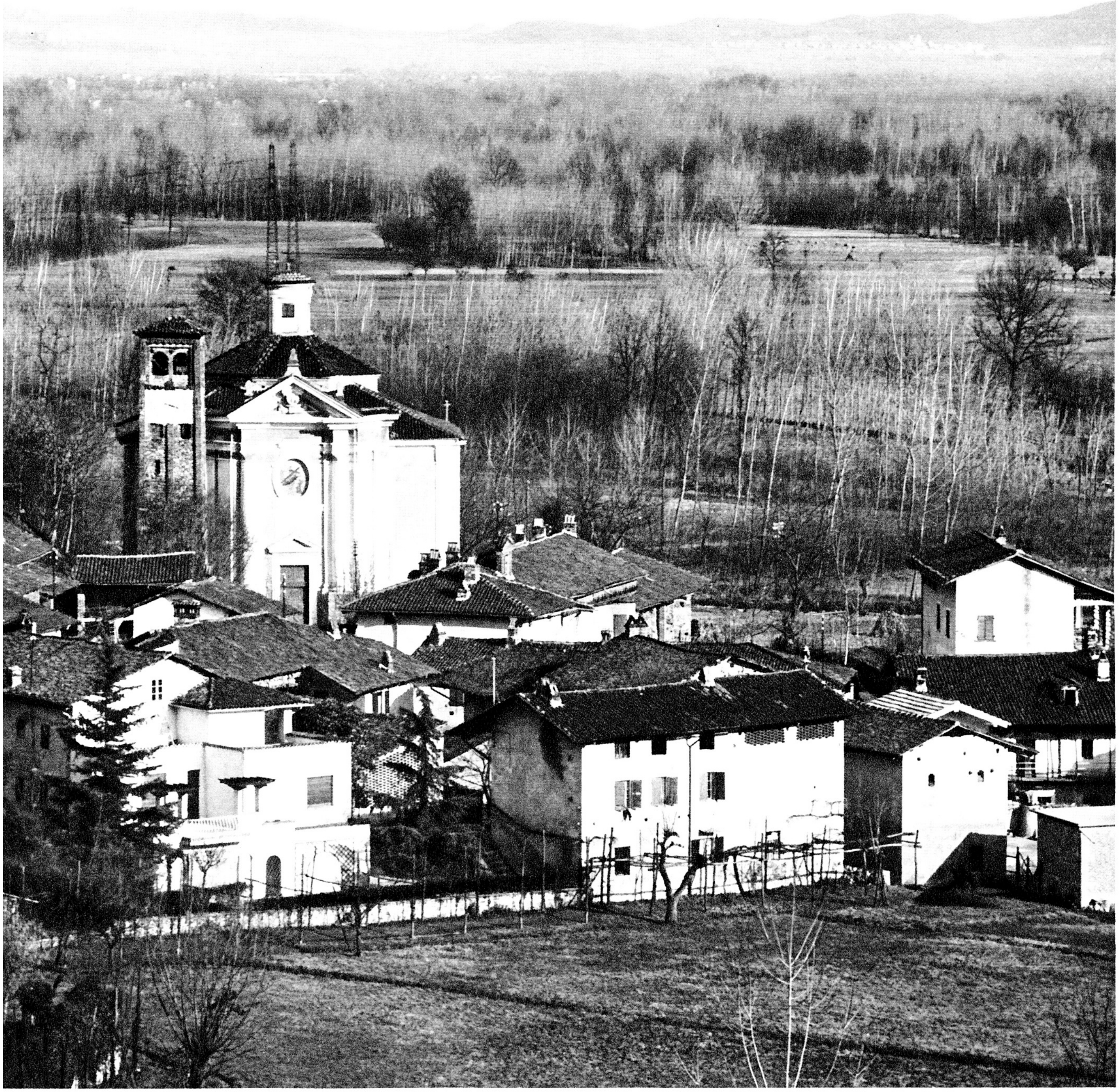
Domenico Burzio with workers in the factory. Burzio beside Camillo Olivetti. In his office.

our technical director." Burzio summed up his own character at a dinner given by the workmen in the factory when he returned with Adriano Olivetti from their visit to America. The two guests of honor were invited to speak after dinner, and when Burzio rose he delivered one sentence and sat down again: "If anything comes up, count on me."

Camillo Olivetti, speaking to the workmen in 1933, on the first anniversary of the death of his oldest and most valued associate, emphasized Burzio's life-long dedication to his work. "We recall his natural intelligence and his remarkable mechanical ingenuity, which allowed him, despite limited schooling, to design excellent machines and work out new processing methods. We remember his self-sacrifice and . . . his intelligent and practical kindness. Born a worker, he always remained in tune with the workers' spirit . . . At times people took advantage of his good nature; he himself often abused his own capacity for work, sometimes undertaking jobs beyond one man's strength. But it was precisely these qualities, which he possessed in abundance, that won him everybody's love and the respect that made it possible for him to get things done without having to order people about."

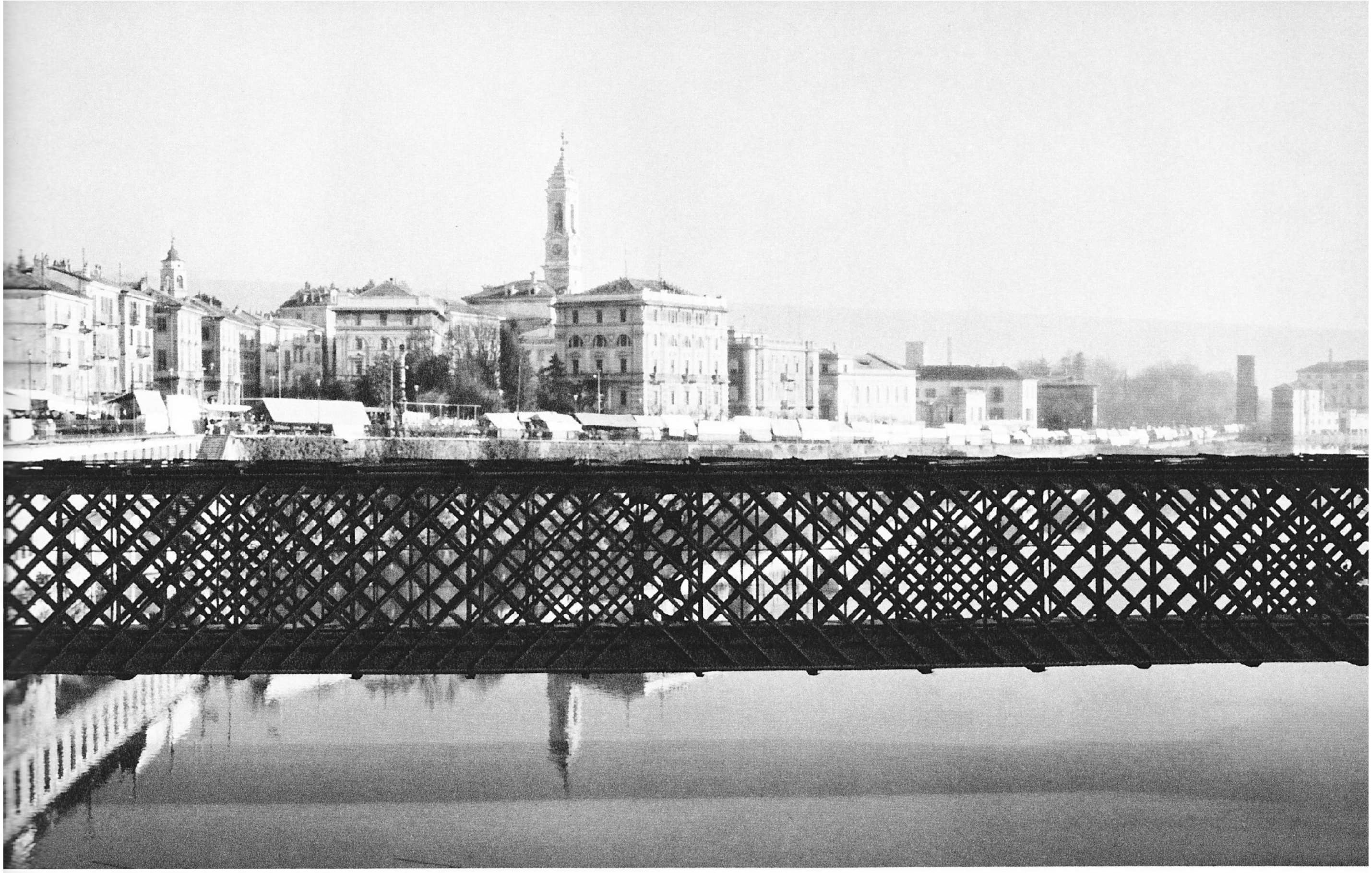


Ivrea's monument to Camillo Olivetti, designed by Emilio Greco, was unveiled on September 29th, 1957. The abstract metal structure and medallion portrait are set against a backdrop of flowing water from the cliff facing the Dora Baltea bridge at the crossroads of the Val d'Aosta, Turin and Milan highways.



Built around 18th-century parish churches and chapels, the villages of the Canavese district typify a centuries-old agrarian economy, now being rapidly transformed.
Right, above. The Dora Baltea river, which flows through Ivrea.

Right, below. The 15th-century church of San Bernardino, screened from surrounding factory buildings by trees. Its walls contain an important example of the art of Piedmont at the beginning of the 16th century: Spanzotti's frescoes of scenes from the life of Christ.



The Alps and the city of Ivrea, from the terrace of the Study and Experiment Center.

The Factories

A factory is a living community whose character is expressed in many ways. One of the fundamental expressions is the architecture of the factory, its walls, space and situation.

Located in the Val d'Aosta at the foot of the Alps, but open towards the hills of the Canavese region and the plain of the Po river, Ivrea in remote times was a fortress-town. It was only after a long career as a military center that the town became the heart of an agricultural province. Later, industry grew up on the outskirts. The first Olivetti plant was built to the south of the bridge over the Dora, on the edge of a small suburb, and with its expansion over the last fifty years a new urban center has been gradually created. The visitor arriving by the Turin road sees this center to the left of the old town, on the road to Castellamonte. Its principal feature is the long line of factory buildings, beginning with the earliest red-brick structures and continuing in the great glass façade, constructed by the architects Figini and Pollini between 1938 and 1942. An innovation in industrial architecture, this façade has been reproduced in publications all over the world, and has become one of the symbols of the Olivetti name. Recently, new glass façades have been added. An overhead passage connects the buildings, which house assembly and other production divisions and the main offices. Behind these factories, where the hills begin, a group of buildings for the company's social services is being erected in the area around the local landmark, a 15th-century church which contains recently-restored frescoes by Gian Martino Spanzotti. In this vicinity also stands the Study and Experiment Center, easily recognizable by its blue majolica walls. Designed by Eduardo Vittoria, and inaugurated in 1955, the center has a staff of specialists and technicians who plan new machines and processing methods.

Opposite the factories, along the Via Jervis, another building complex includes cultural and social assistance facilities, such as the library, the infirmary and the health and hygiene services. Beyond this group are the cast-iron and light-alloys foundries, as well as the special-parts factory, which manufactures electric motors for typewriters and calculating machines.

The main factory district represents the growth of the industry since its establishment. In the last ten years, however, the great expansion of the plant and its economic role in the life of Ivrea and the Canavese region has called for progressive decentralization. Production and assembly of teleprinters is, accordingly, carried out in a separate plant in the San Lorenzo section of Ivrea. At San Bernardo, four kilometers from the city, a large factory with a separate social services building, designed by Eduardo Vittoria, has been built for the O.M.O. *(Officina Meccanica Olivetti)* machine-tool division.

Under the program for decentralization of production, which is also aimed at economic and social revitalization, the Olivetti company took over a bankrupt textile factory at Agliè, a small community in Piedmont. The plant now mass produces the "Lettera 22" portable, and provides work for those who had been left jobless.

In Turin, a factory which was completely rebuilt after its destruction during the war, manufactures the "Studio 44" semistandard typewriter. At Massa, in Tuscany, in the plain between the Tyrrhenian sea and the Apuanian mountains, the Synthesis factory, which produces various kinds of filing cabinets and metal office furniture, has been expanding steadily in the last several years.

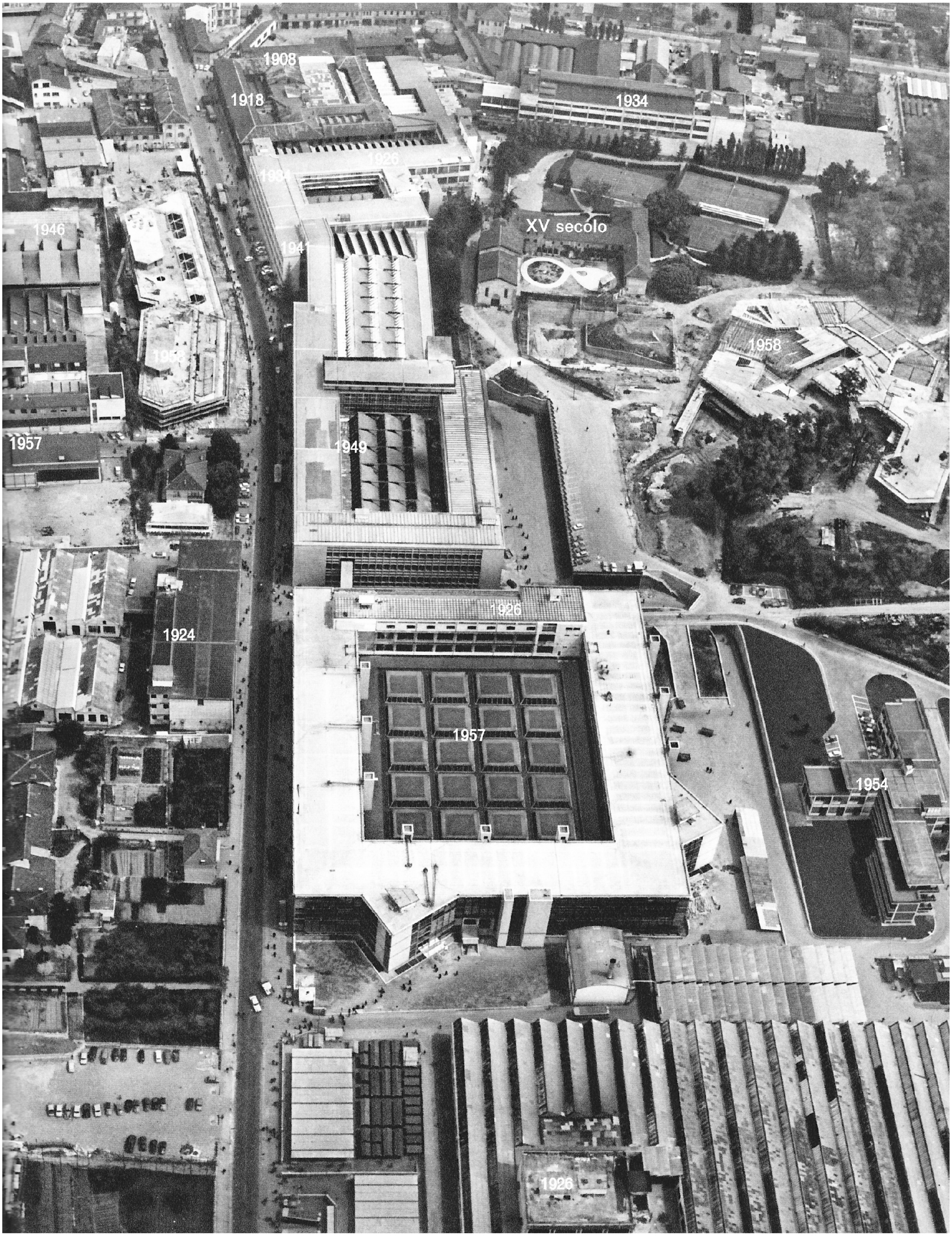
With the aim of contributing to the industrial development of southern Italy, a factory for typewriters and calculators was built near Pozzuoli, on the Domitian Way, fifteen kilometers from Naples. While the growth of the industrial zone in Ivrea was considered in relation to the historic center of the city, the Pozzuoli factory had to be planned in terms of open country, noted for its natural beauty and historical associations. The measure of Luigi Cosenza's success in designing the building, is that its modern forms fit unobtrusively into the landscape.

In Italy, five Olivetti factories are in operation in the north, center and south. The various plants abroad manufacture the same models, with the same materials and technical standards. The first of these, belonging to the Hispano Olivetti company, established about thirty years ago, is located in Barcelona. Most extensive of the foreign factories, it includes in addition to production and assembly shops, a foundry, carpentry division, office building, dining hall, day nursery, sports fields and swimming pool. The general style of the buildings resembles that of the Olivetti establishment in Ivrea.

The second largest factory abroad is that of the British Olivetti company in Glasgow, founded in 1947, which employs more than eight hundred people in production alone. Other factories include those of Olivetti Argentina S.A. in Buenos Aires, Olivetti Industrial S.A. in São Paulo, Brazil—both designed by the architect Marco Zanuso, and Olivetti Africa (Pty) Ltd. in Johannesburg, Union of South Africa.

These establishments in widely separate parts of the world are distinguished by a general unity of style, despite the variety of functions and expressions of the various buildings. For almost three decades, the Olivetti organization has sponsored creative forms in its building program. The architects employed and commissioned to carry out this program have not dealt merely with the problem of functional industrial constructions, but have attempted to give organic architectural expression to the factory's relationship with its environment. The unity of spirit is apparent in the buildings for the social and cultural services, in the employees' housing developments, in the show rooms and stores in Italy and abroad, in the town plan for Ivrea and in the regional plan co-ordinating the towns of the Canavese region.

Right. Air view of the factory area. The dates indicate the year of construction of the various buildings.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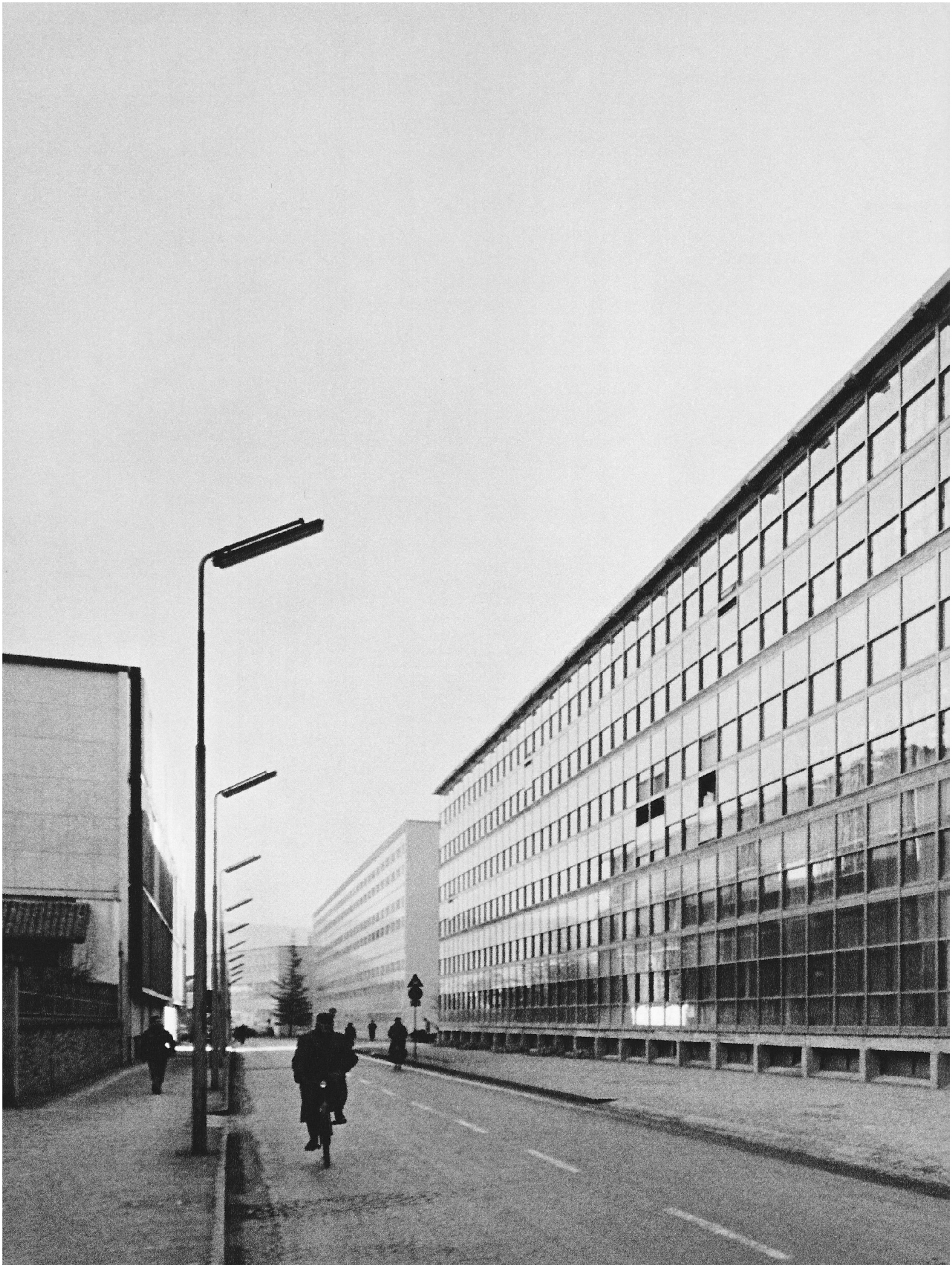
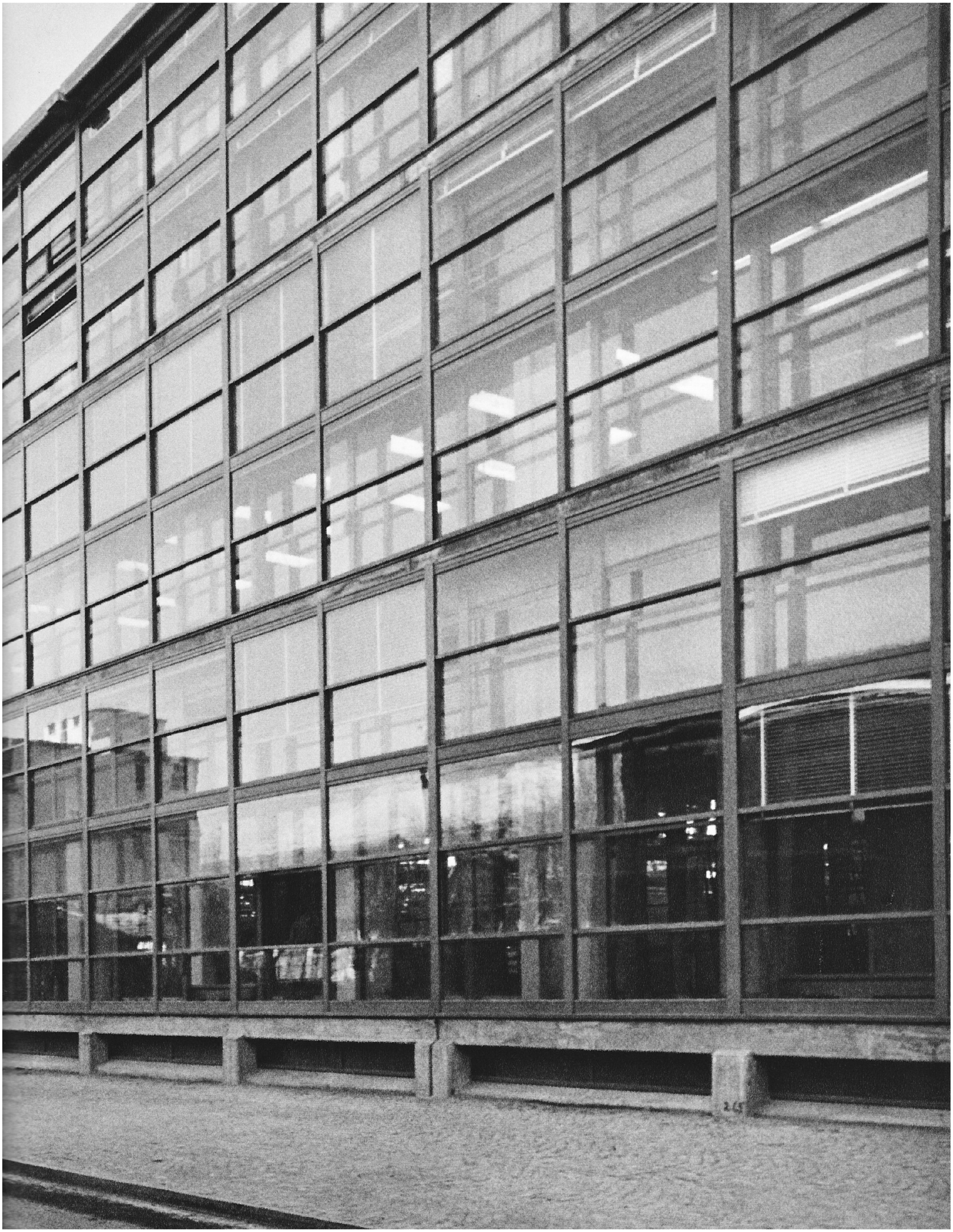
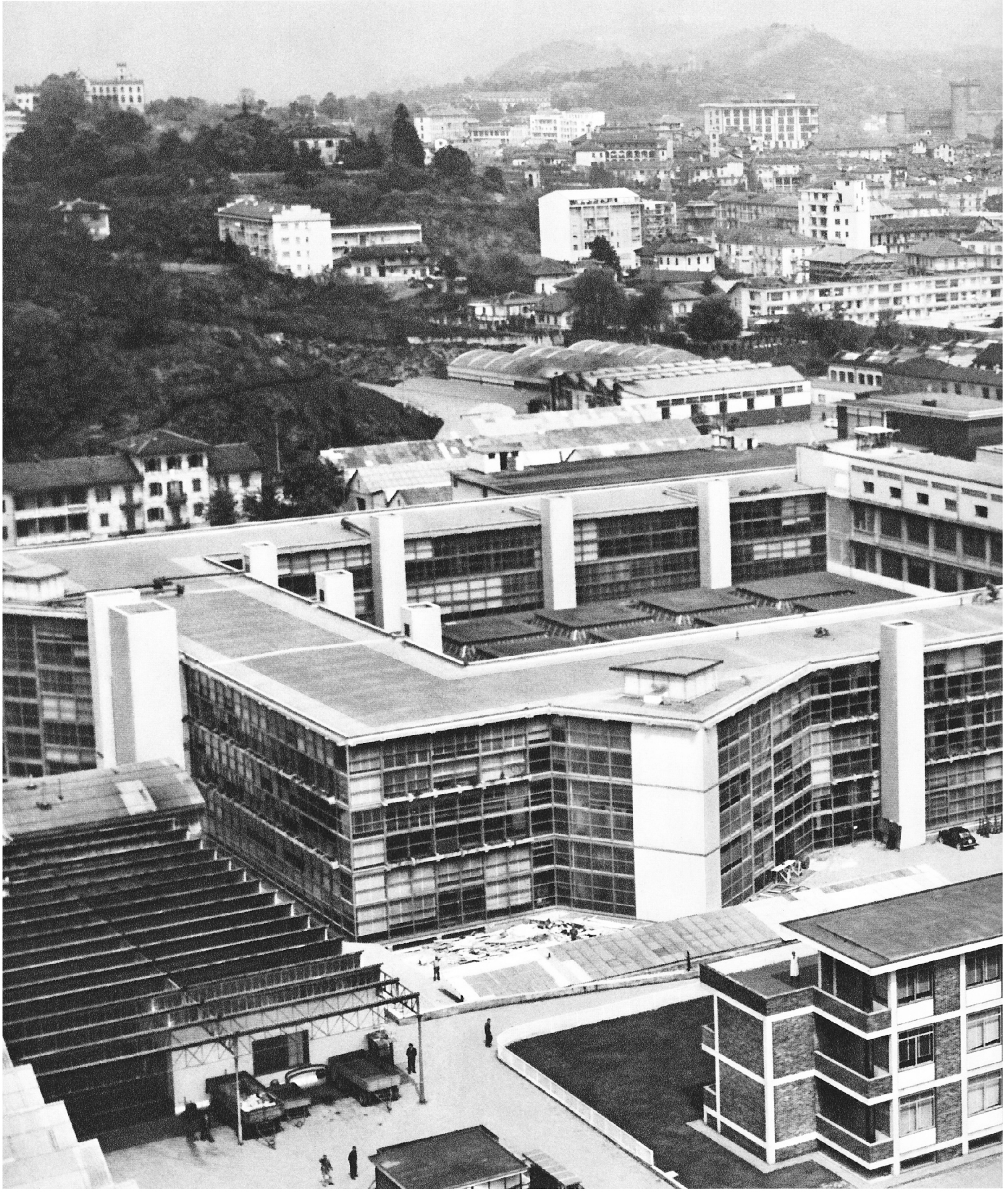
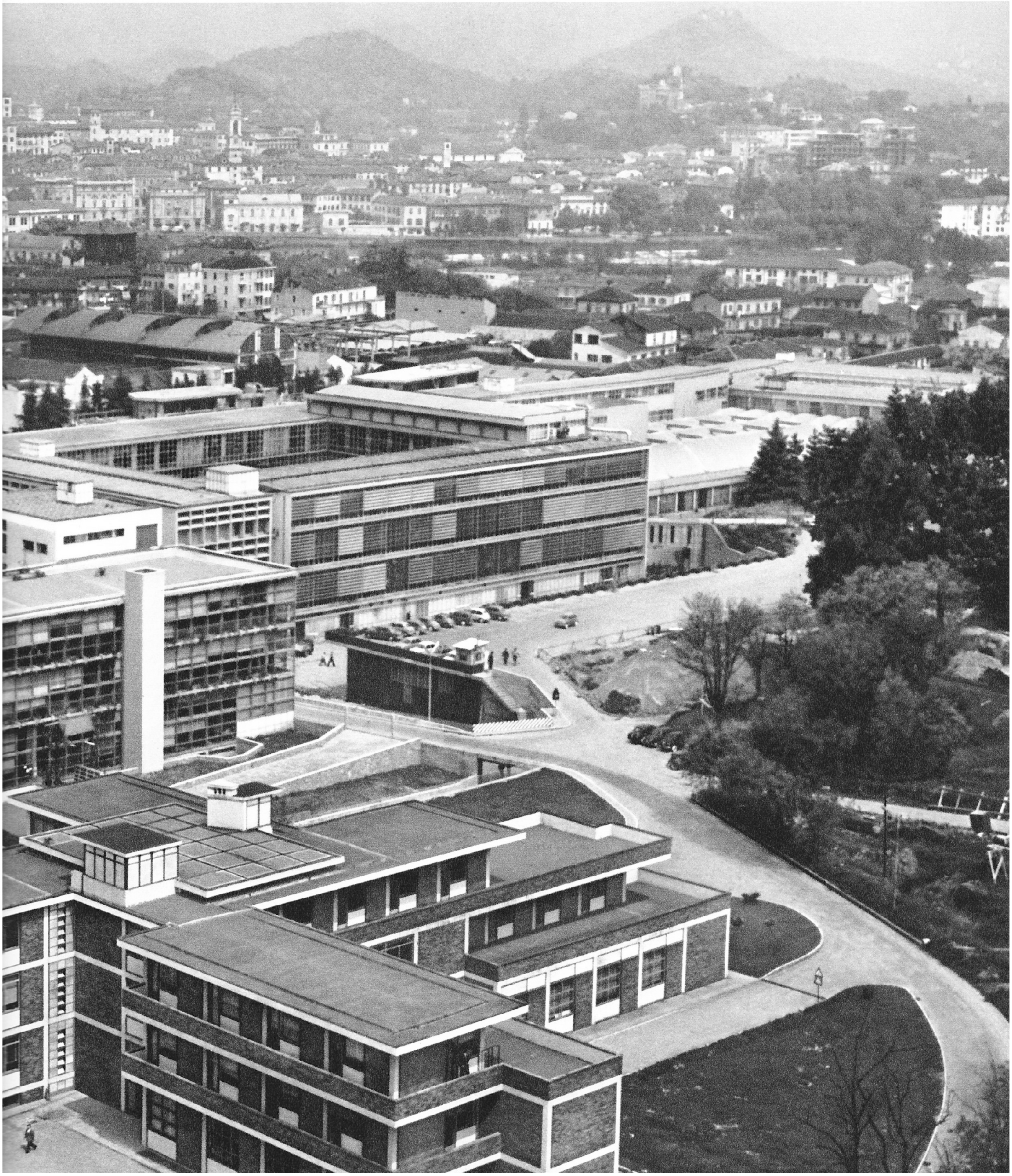
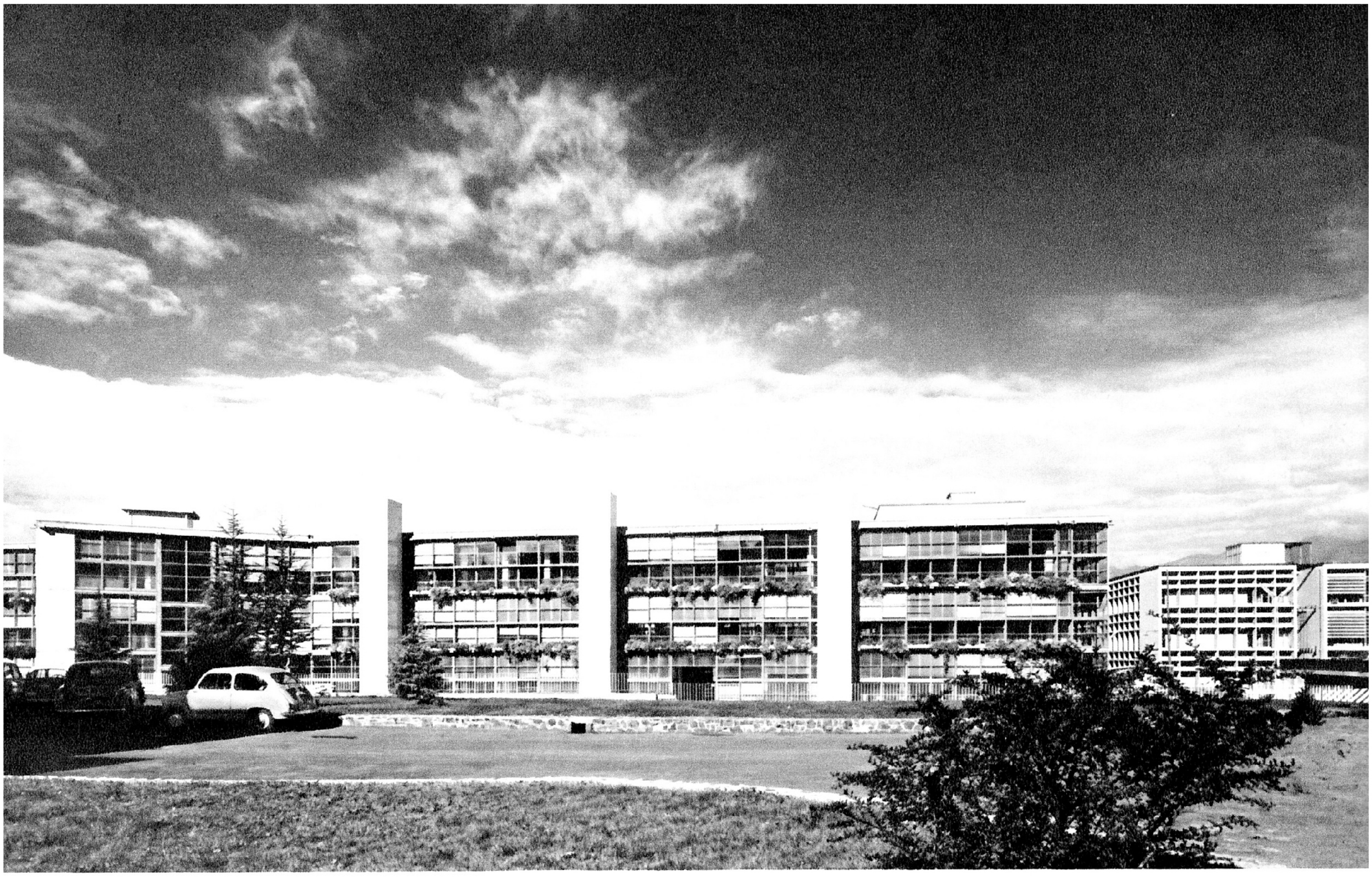






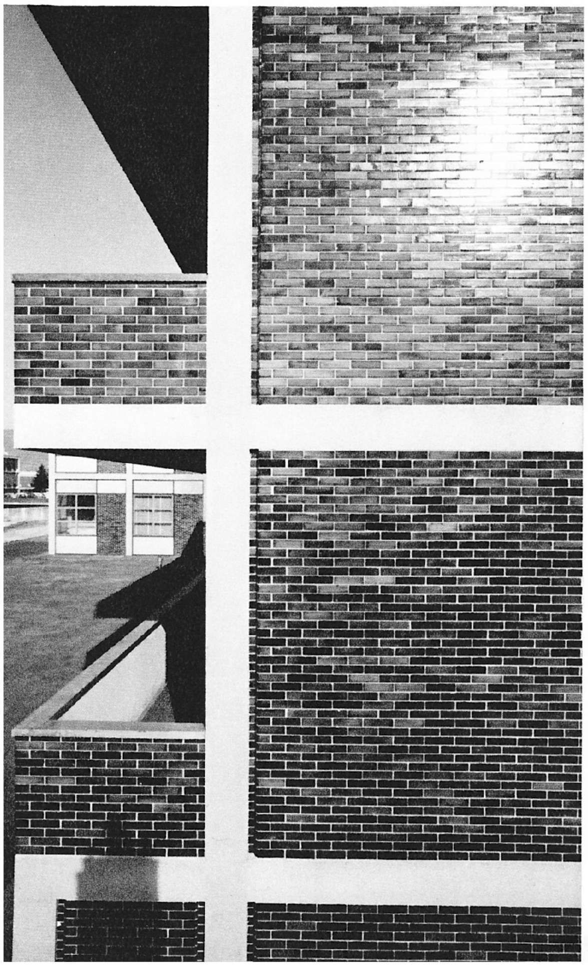
PUBLIC LIBRARY

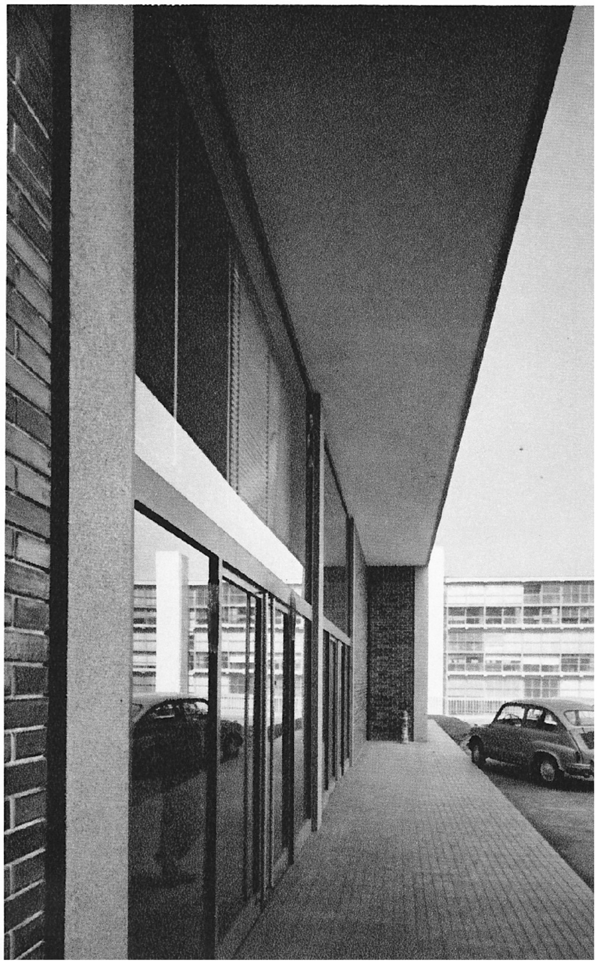




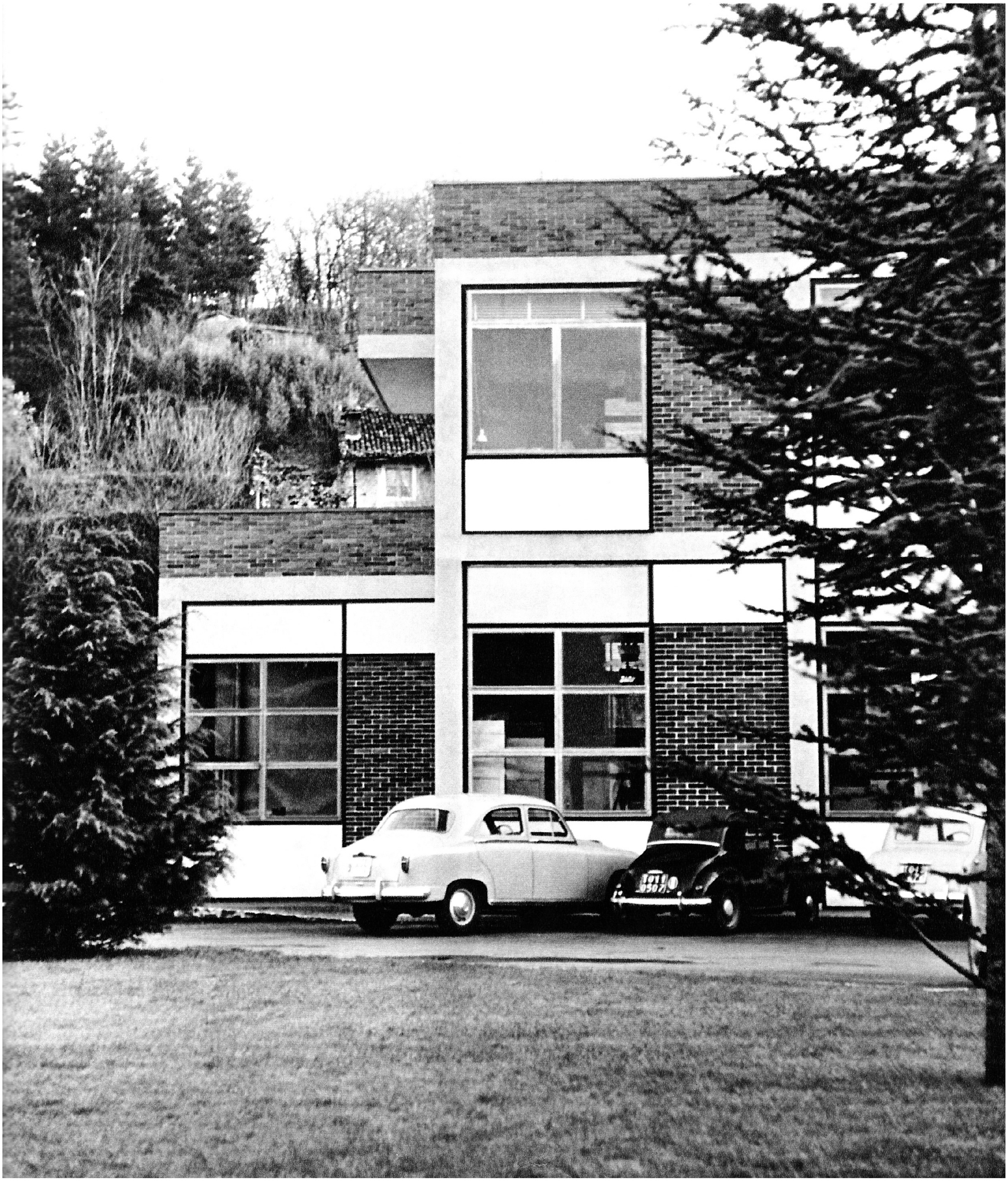
The south façade of the most recent group of factory buildings. The three towers punctuating the horizontal lines of the structure carry water pipes, telephone and electric lines to each floor, and their bases connect with underground tunnels along which these systems pass.

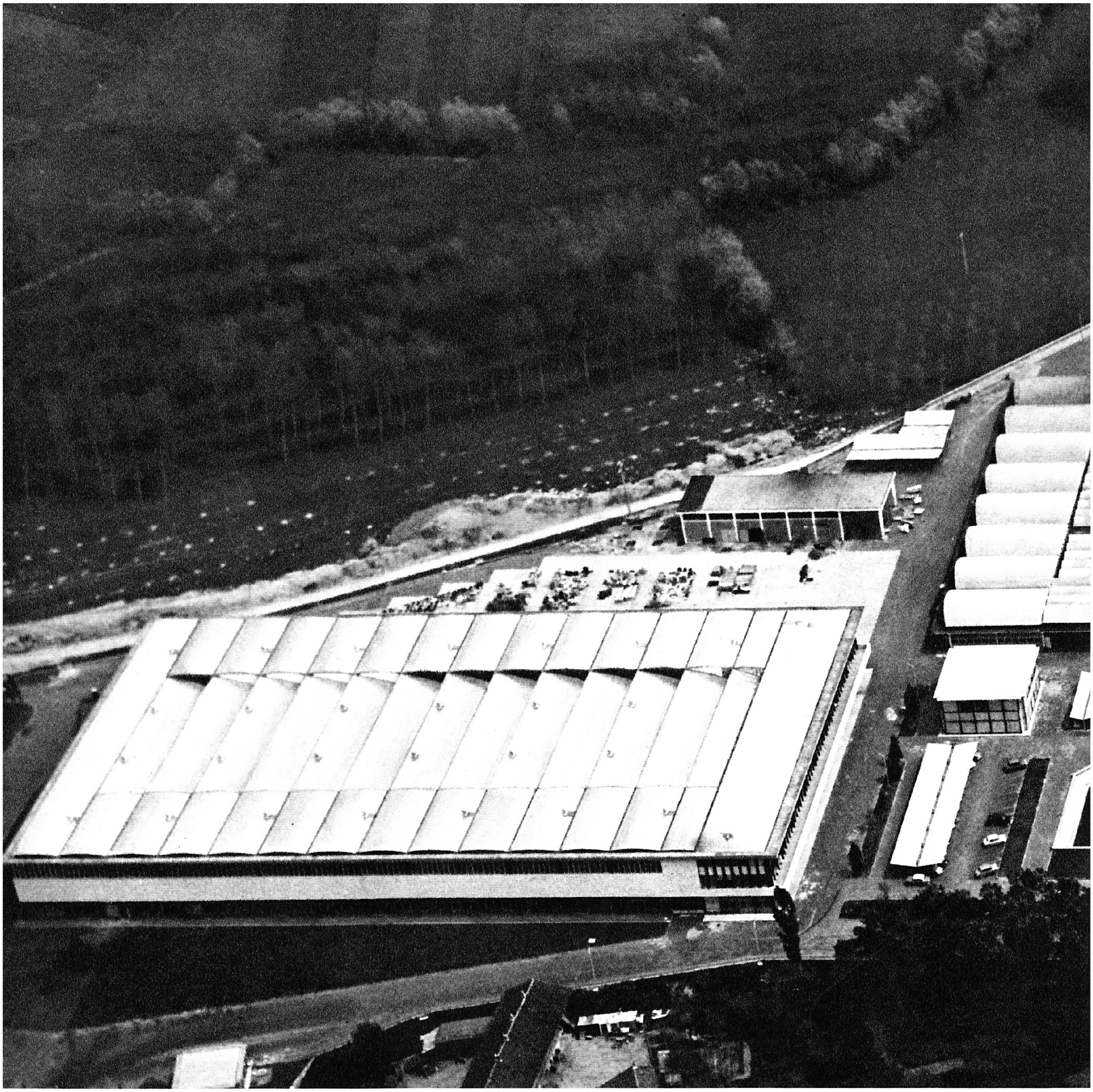
Right. In the north façade, the architects Figini and Pollini have extended the theme of the great glass wall they designed in 1937. Then an innovation in industrial architecture, this feature has become a hallmark of the Ivrea company.



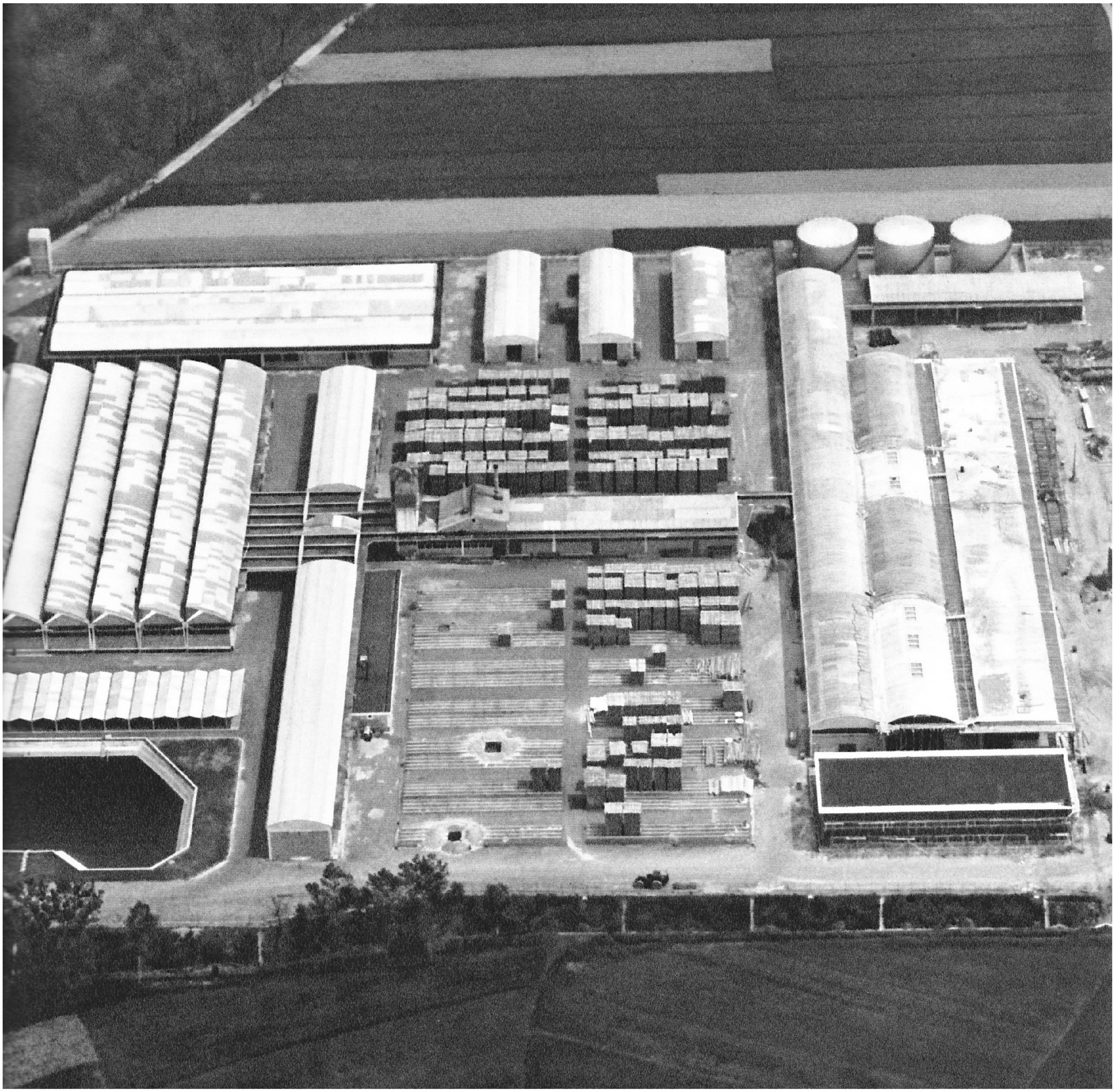


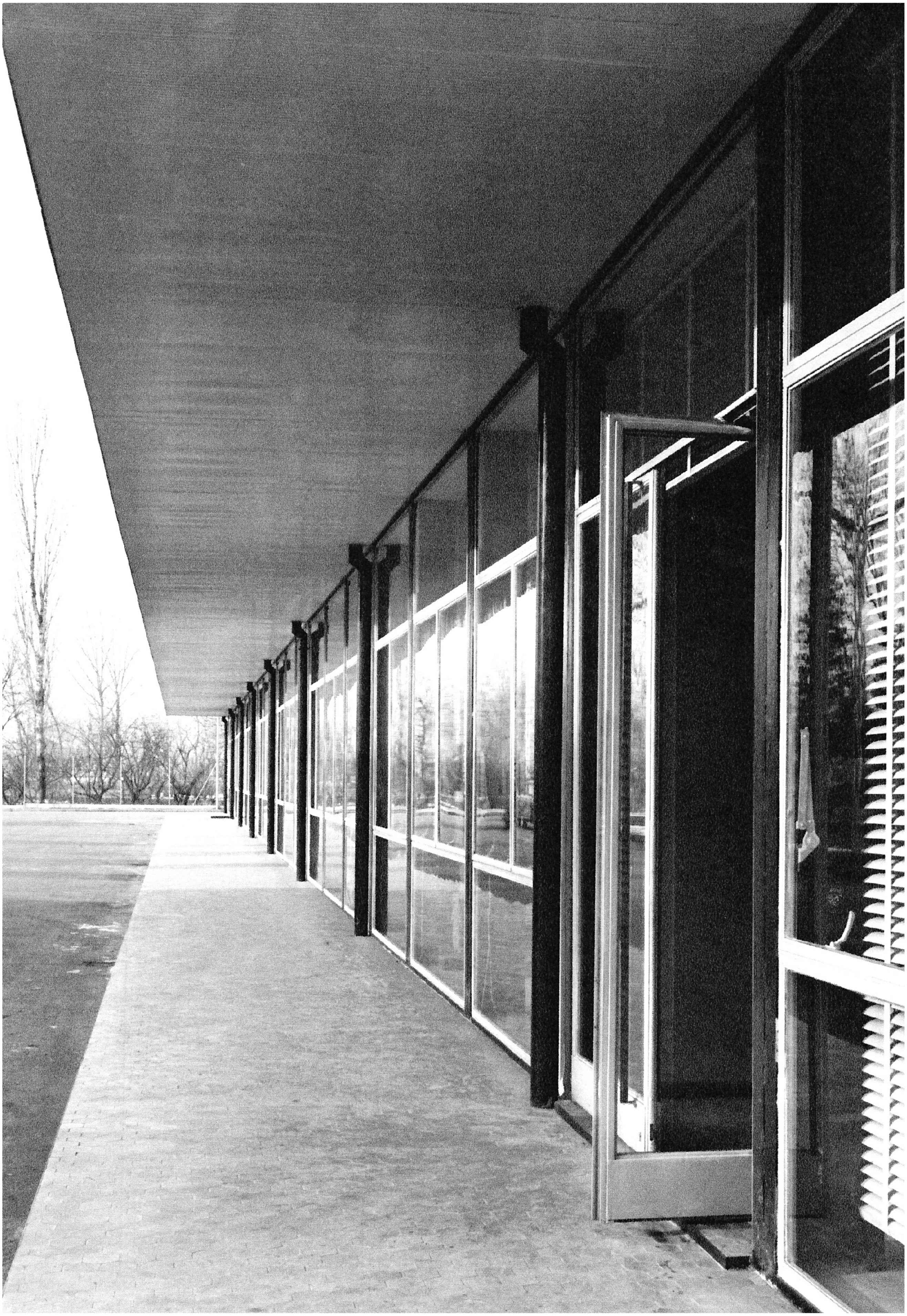
A central staircase serves the four wings of the Study and Experiment Center, which correspond to four different sections and offices. Designed by Eduardo Vittoria, the building was inaugurated in 1955.

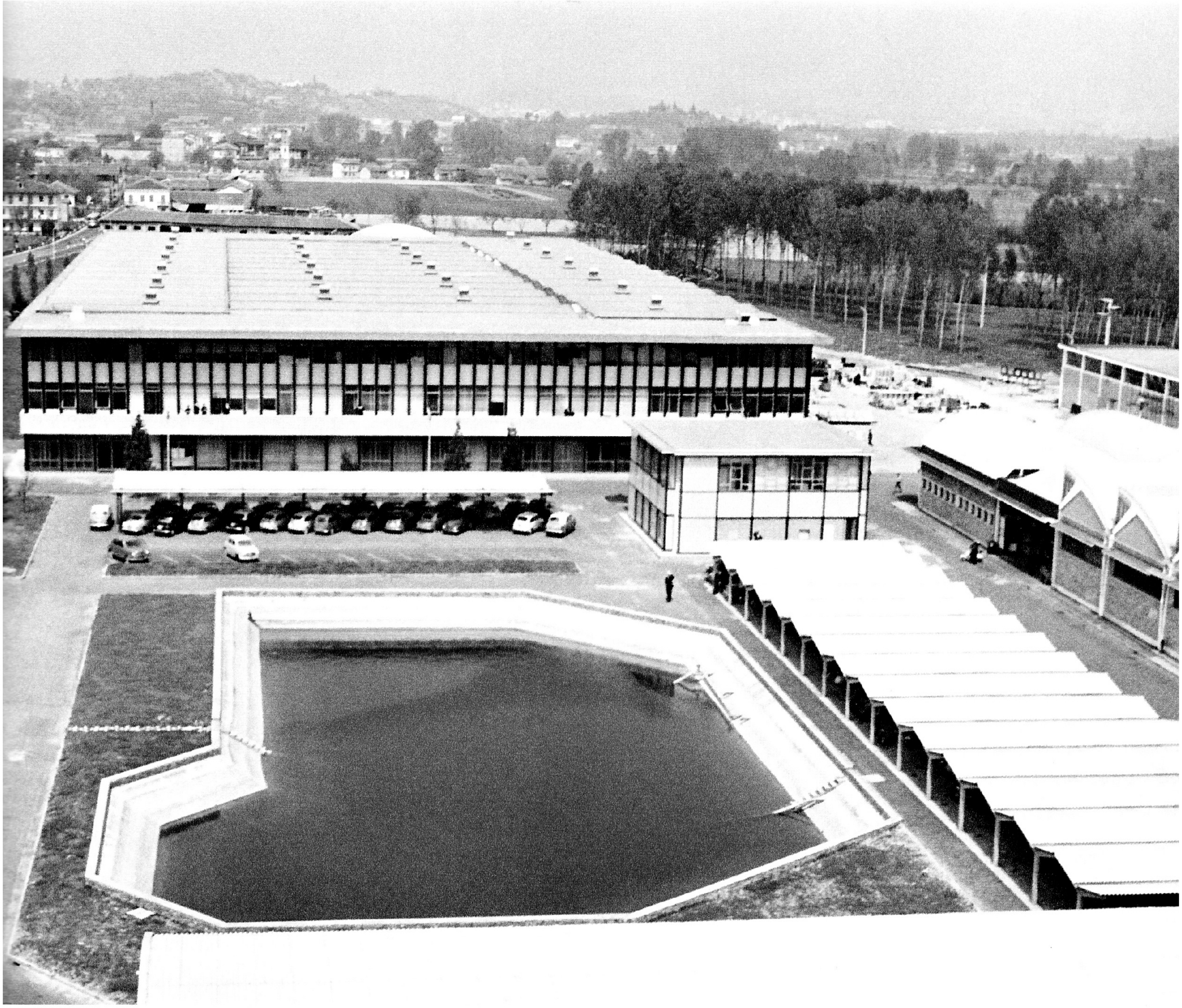




The O.M.O. factory (Officina Meccanica Olivetti) for the production of machine tools is situated on the Turin–Ivrea highway, at San Bernardo, and was designed by Vittoria. Founded in 1926, O.M.O. was moved here in 1956. The metal structure required 638,000 kgs. of iron, and covers 7,370 square meters. It is flanked by buildings housing the social services and the cafeteria.

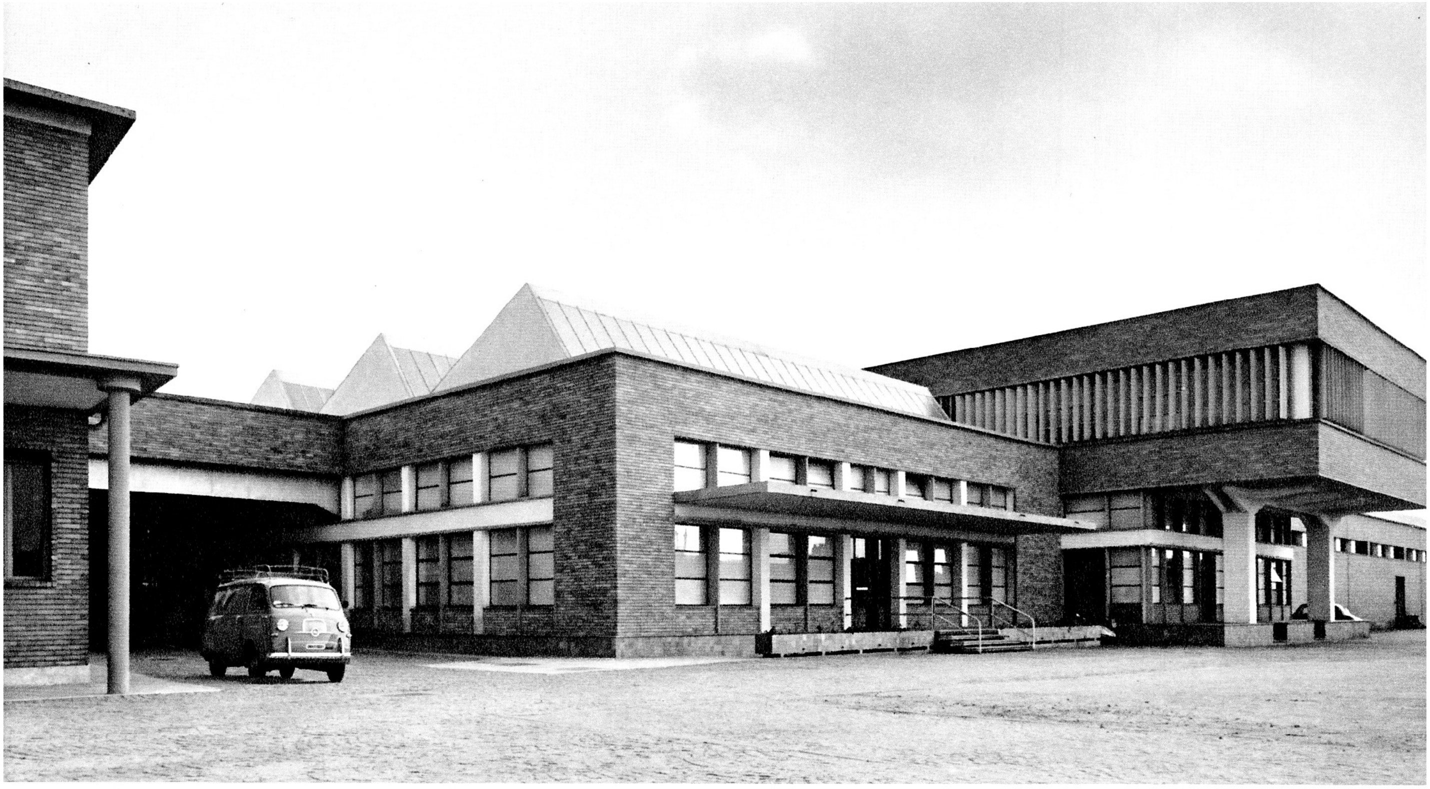


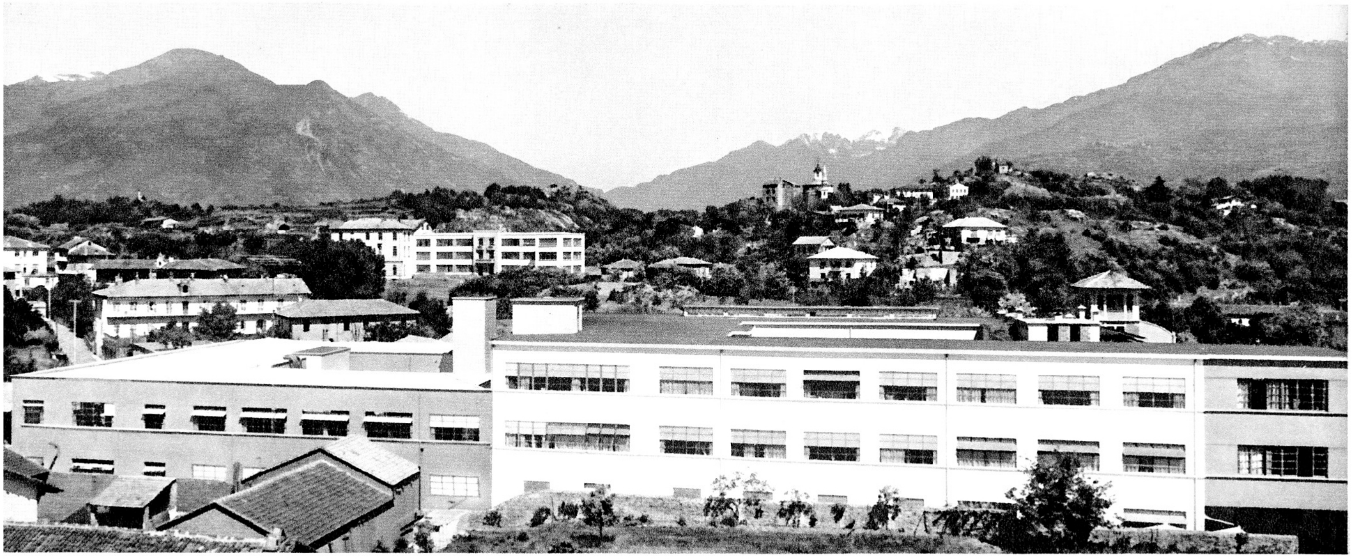




O.M.O.'s main, or south, façade. The three floors of this section are occupied by offices. To the right, the social services building. In the large area to the rear, castings for the bases of machine tools are seasoned in the open air.

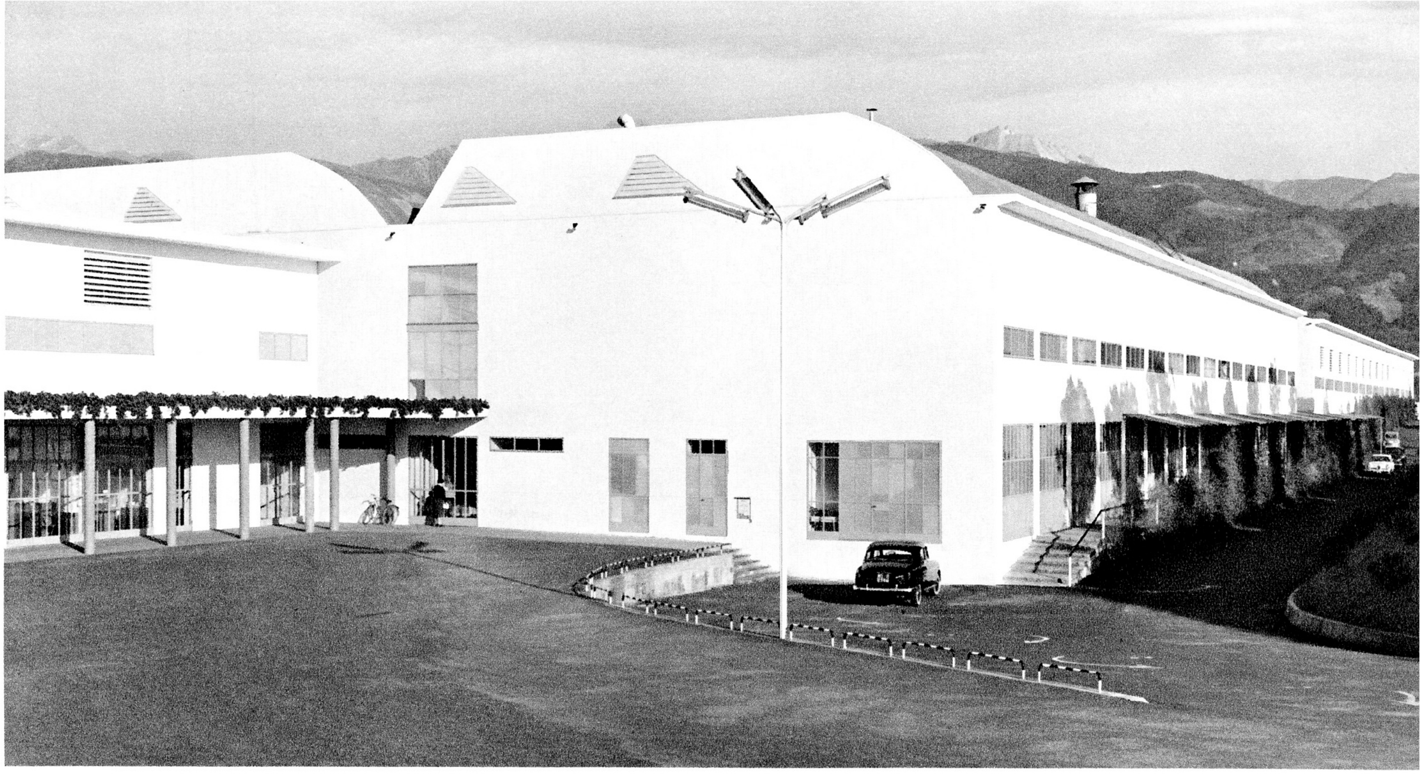
The Agliè factory, on the outskirts of the Canavese town of that name, produces the "Lettera 22" portable typewriter, complete except for the aluminium-alloy parts which are cast at Ivrea. The portable is available in three types of character and 96 different keyboards.



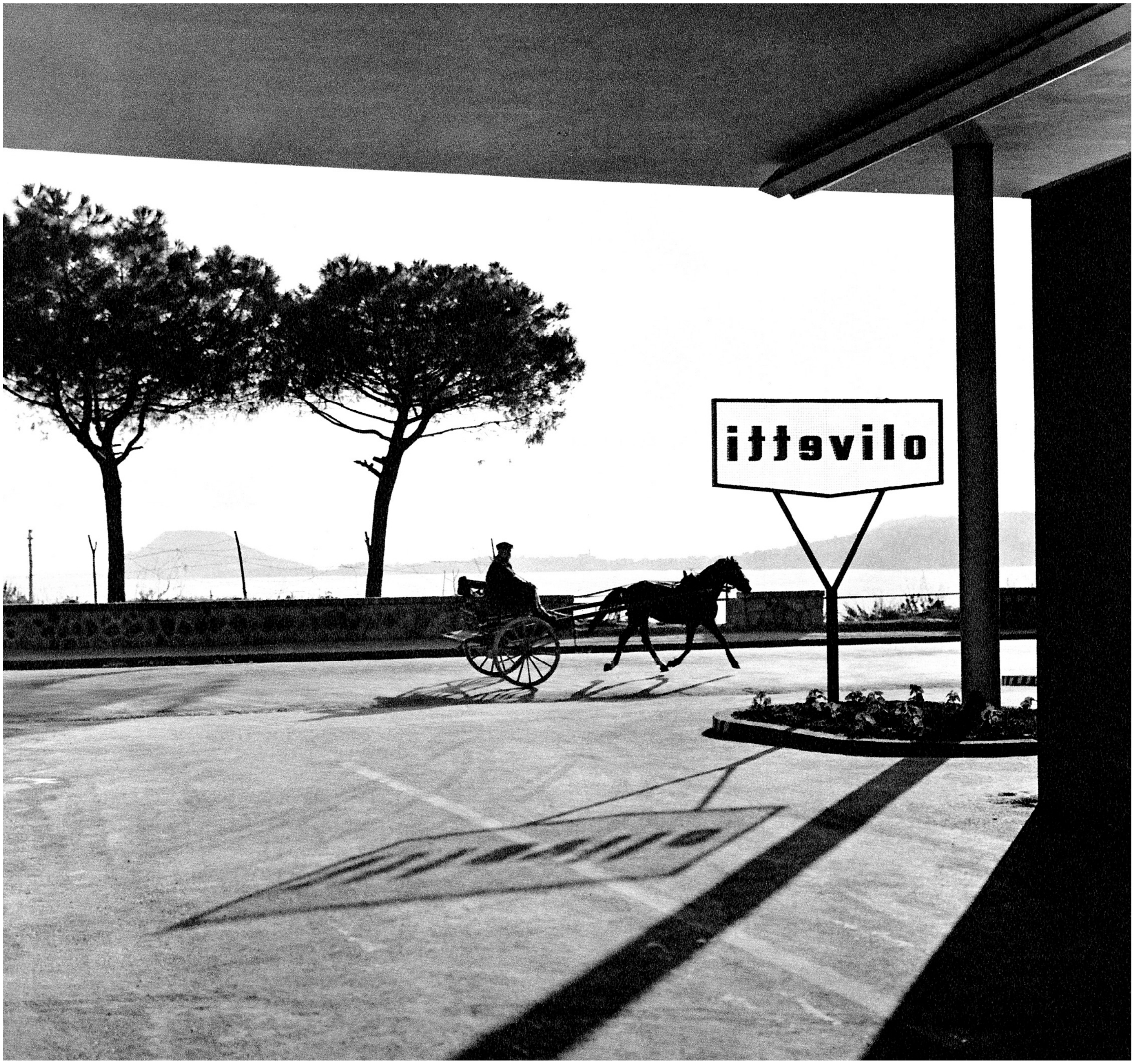


Above. The factory at Turin, where the semi-standard typewriter is produced.

Below. The San Lorenzo factory, at Ivrea, for the construction of various types of teleprinters.



The Synthesis factory, near Massa, in the plain between the Tyrrhenian Sea and the Apuanian mountains. Begun in 1943 by Bottoni and Pucci, most of the construction, including new workshops, the social services and the cafeteria, was finished from Bottoni's design after 1953. The main workshop is a three-aisled structure vaulted with prefabricated elements.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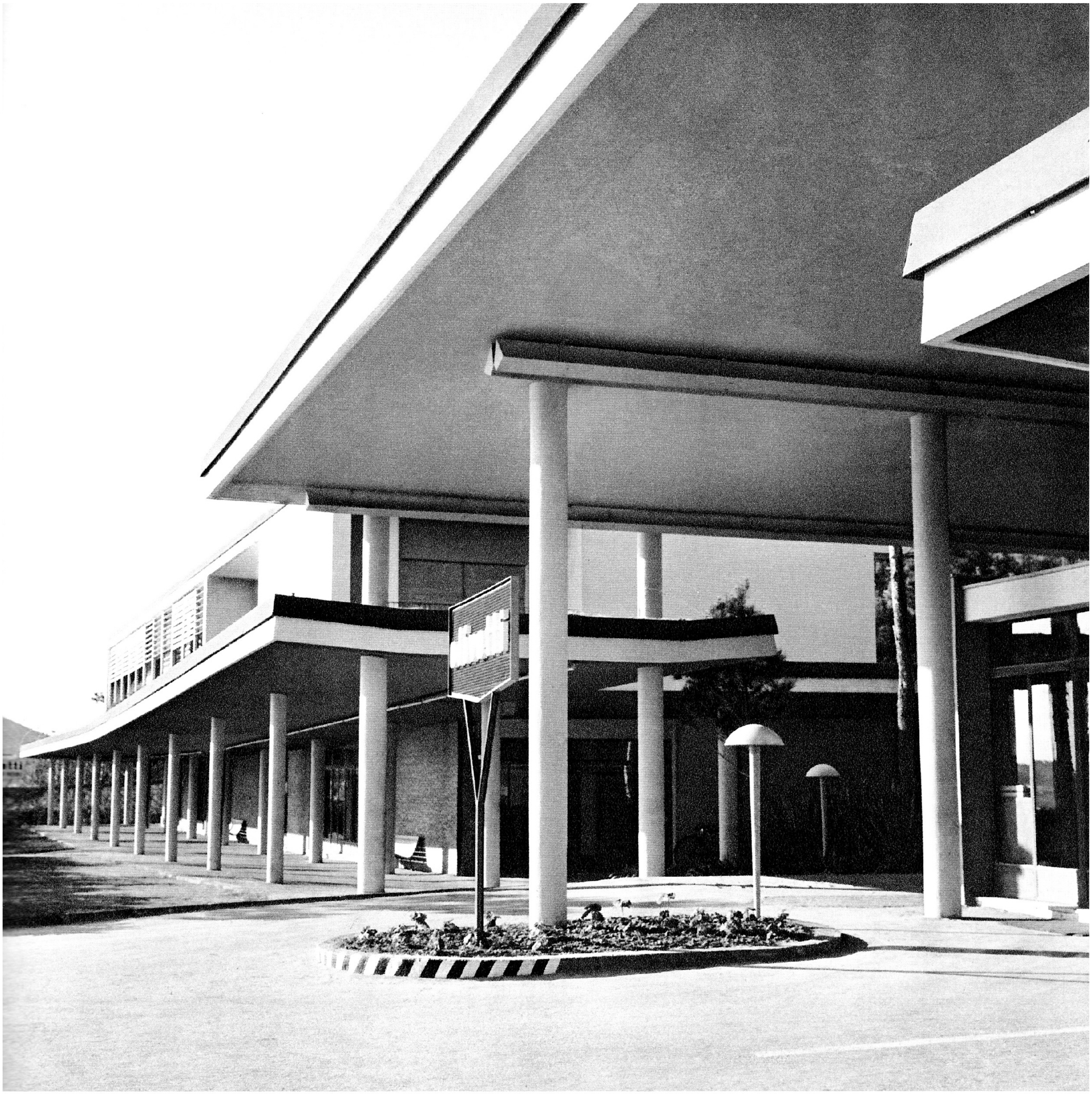
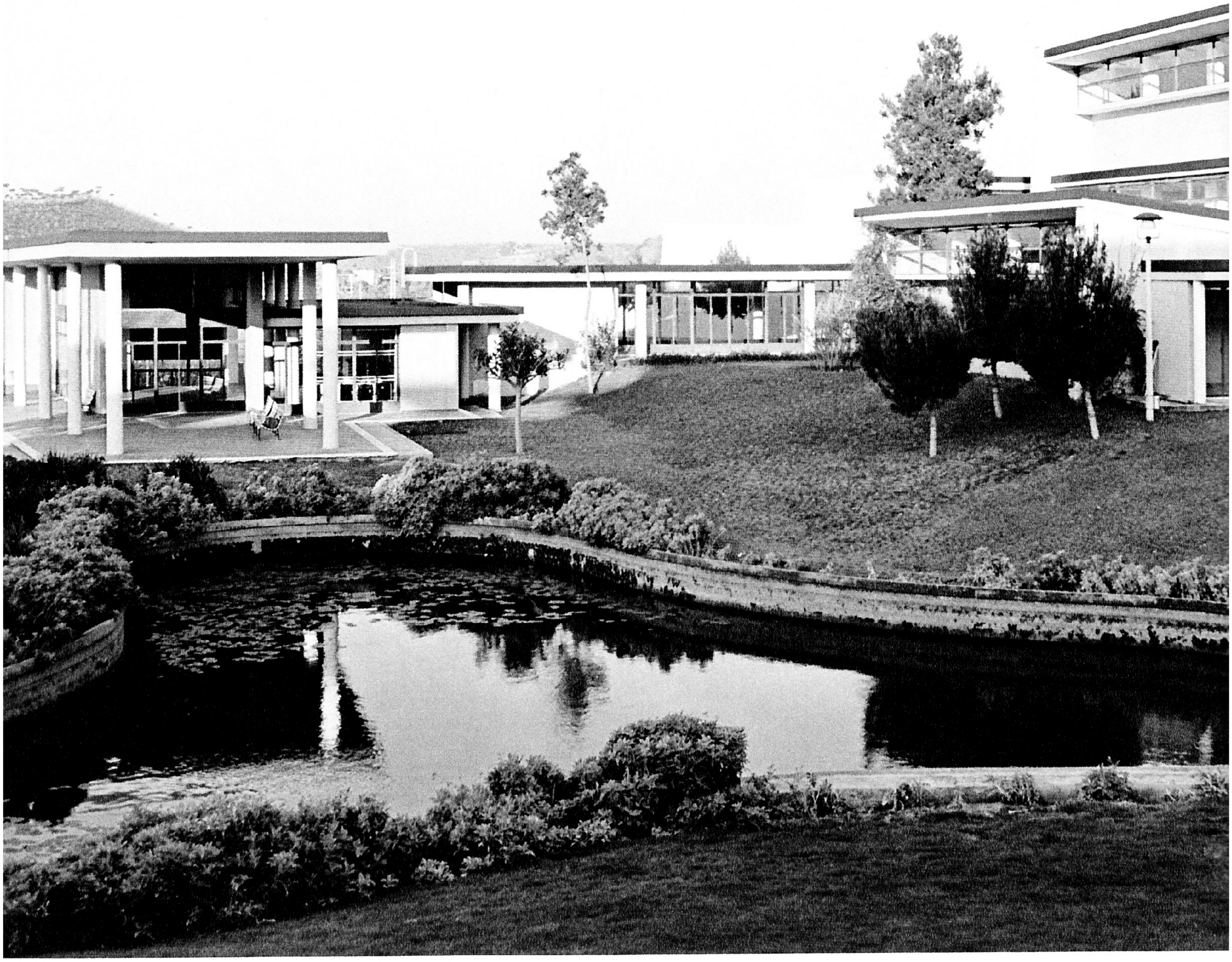
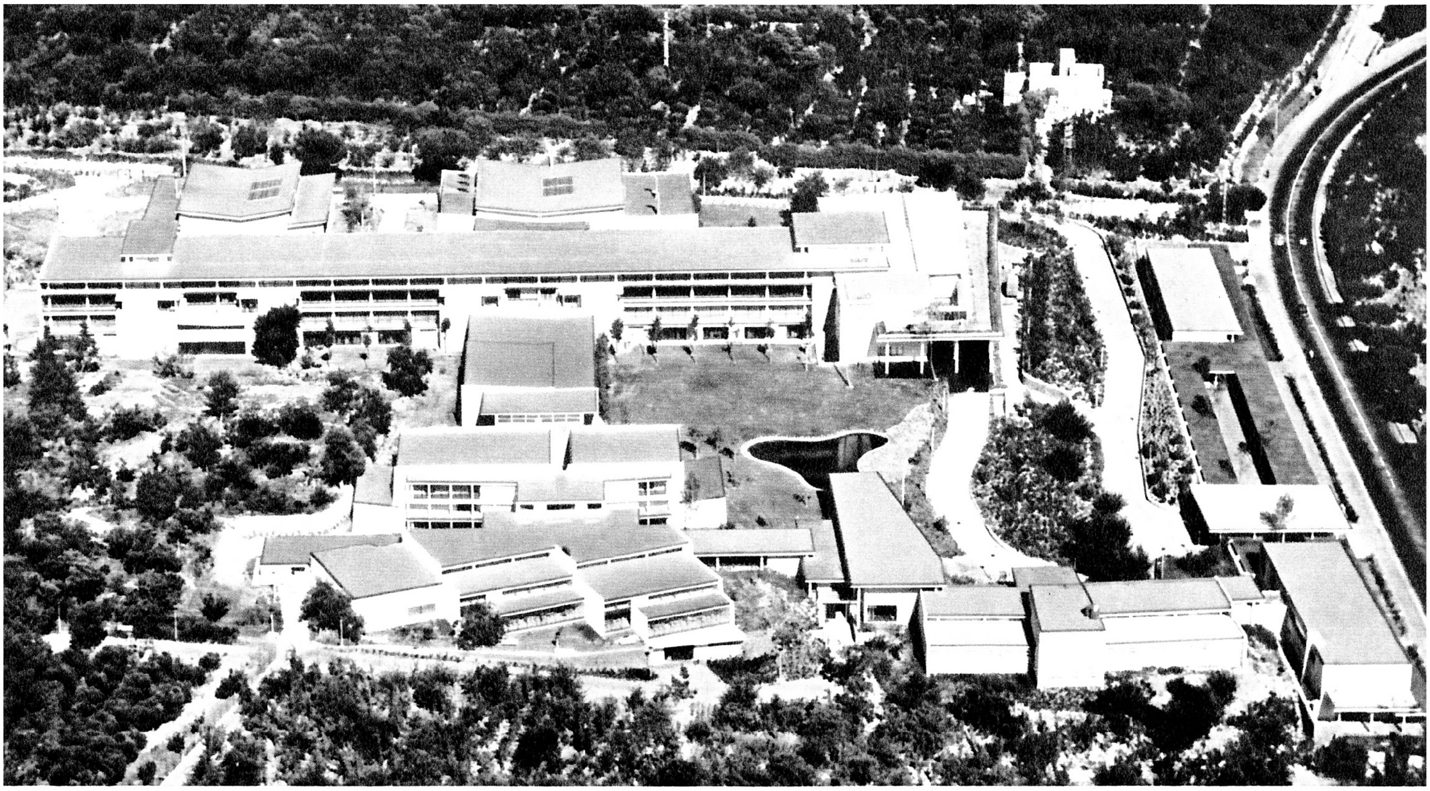
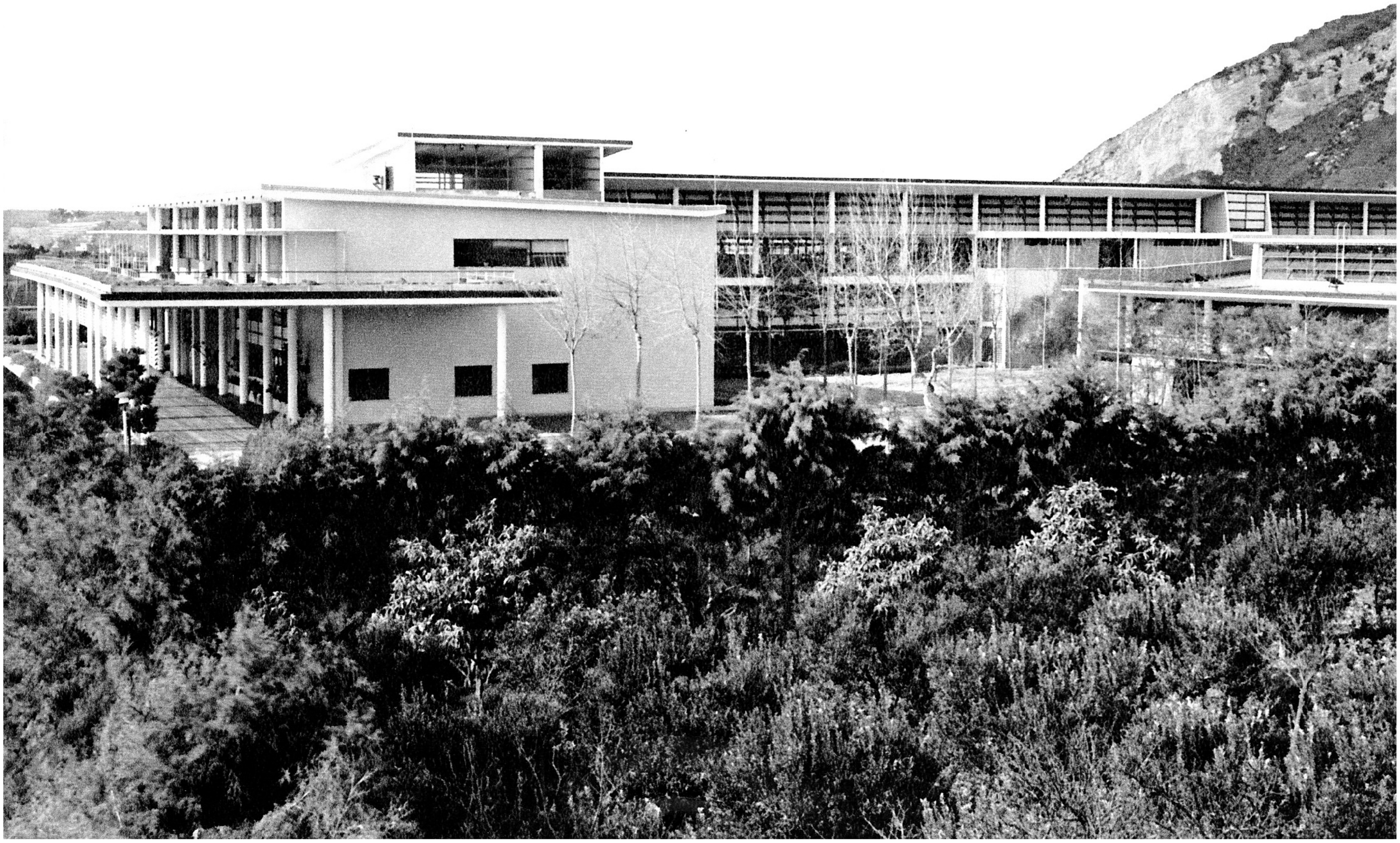


Facing the Phlegrean gulf, between Nisida and Capo Miseno, the porticoes of the factory of Pozzuoli open on the Domitian Way, 15 kilometers from Naples.

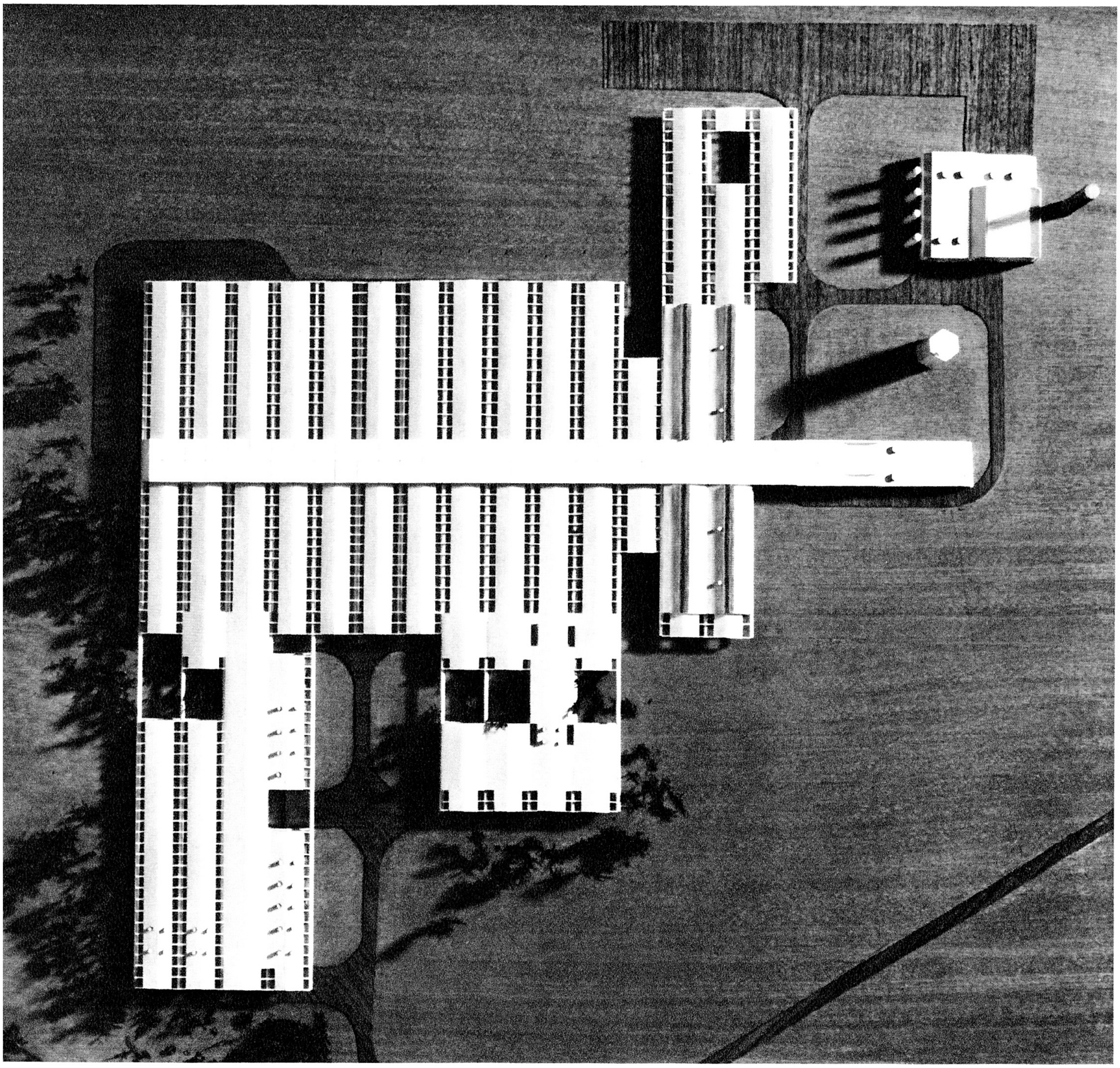


Luigi Cosenza's structure, which forms a cross, admits light and an intimate view of the surrounding landscape, but keeps out the glaring southern sunlight. A covered walk leads from the plant to the cafeteria, the library and the infirmary.

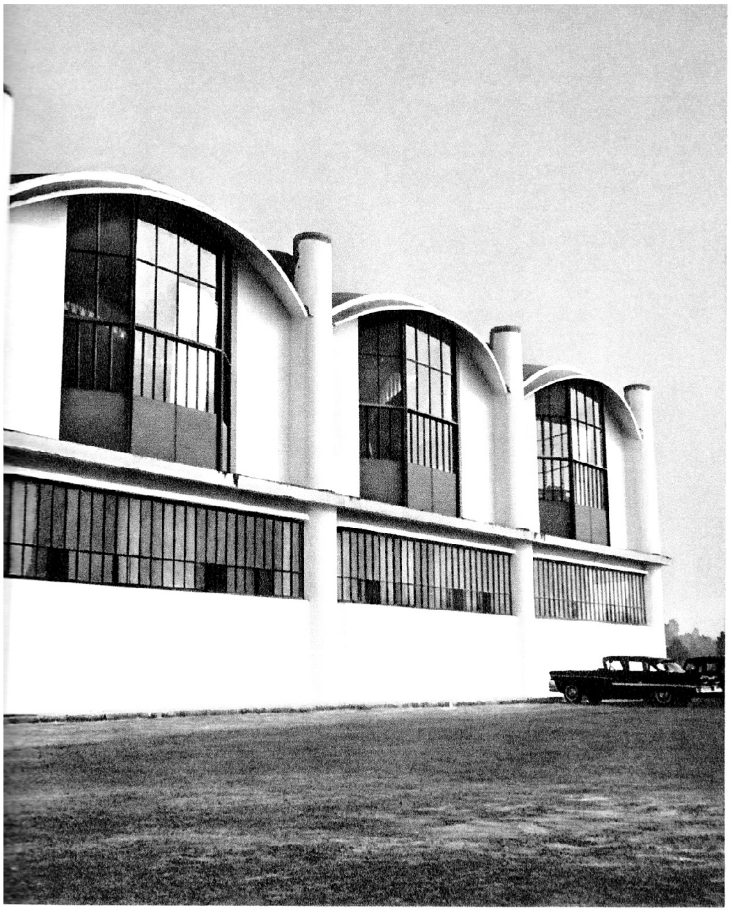


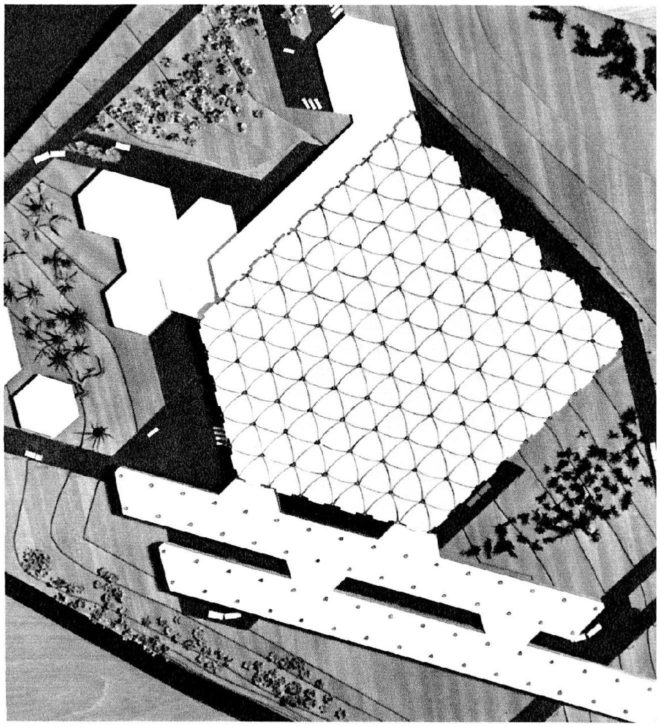


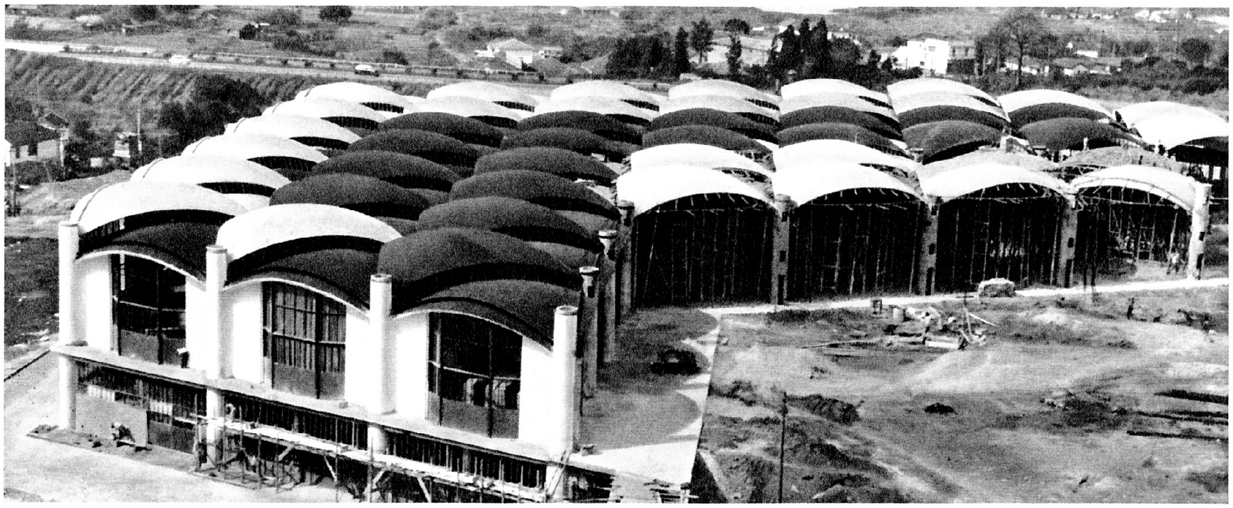
Hispano Olivetti of Barcelona has about four thousand employees in its industrial and commercial organization. This associated company, which now has six branch offices and more than sixty concession agents, produces and sells most of the models of typewriters and calculators.



Olivetti Argentina's large new plant, designed by Marco Zanuso, is under construction at Merlo, about thirty kilometers from Buenos Aires, and will cover an area of 21,000 square meters. In addition to the production facilities, the building will house social services, an infirmary, reading rooms, a library and a cinema.



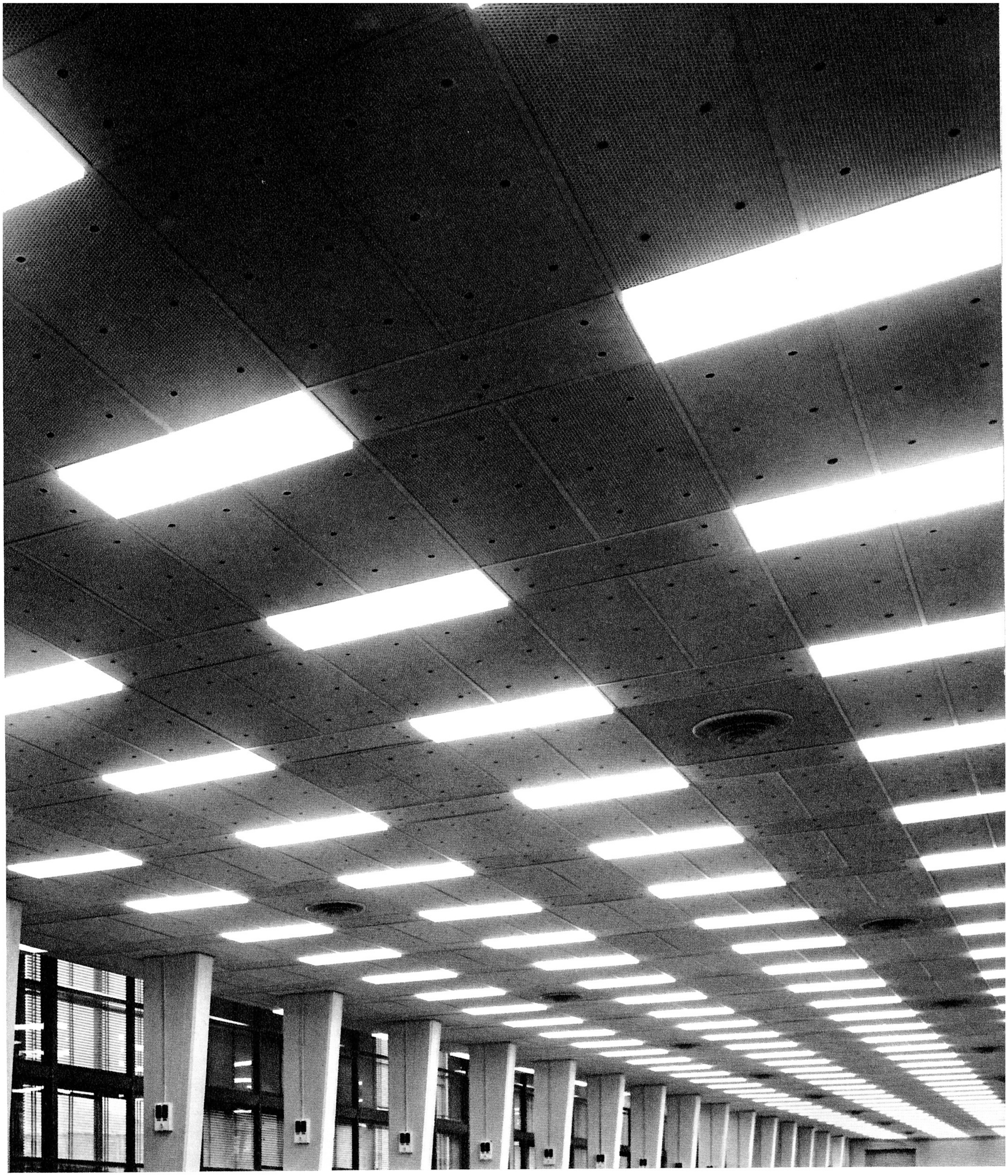




A new factory in Brazil, six kilometers from Sao Paulo, at Guarulhos, on the Sao Paolo–Rio highway, was begun in 1957 and is now nearing completion. Architect Zanuso designed a series of thin-webbed vaulted structures, using a spherical-triangular module. The factory will be air conditioned and will cover 70,000 square meters.

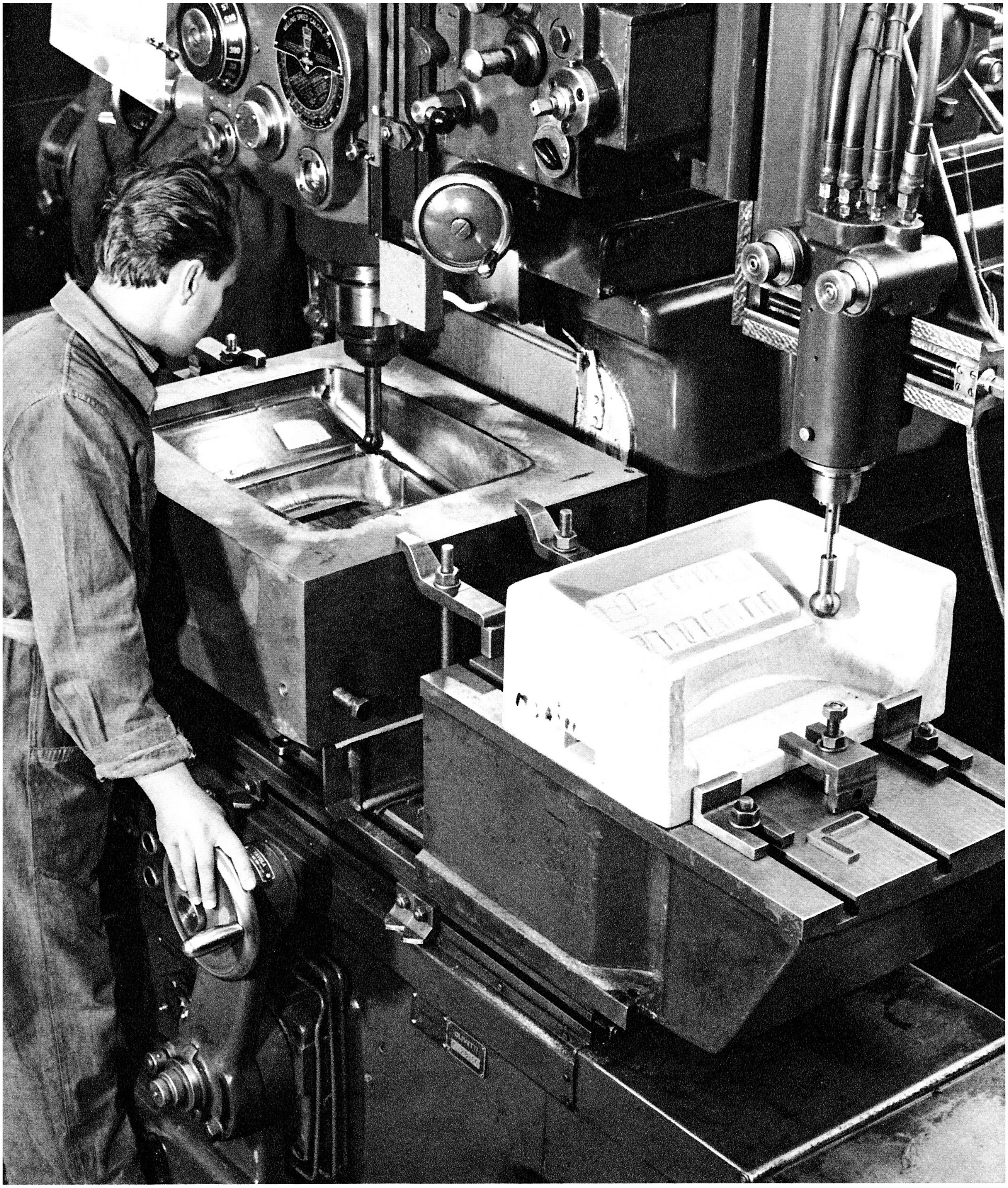
The Olivetti school selects and trains promising students who wish to become skilled workers and technicians. Those who hold a high-school diploma or a certificate from an elementary technical training school, are eligible for a three-year course, on successful completion of which they qualify as skilled workers. For those who have only a grade-school diploma, the school offers a five-year course.

In addition to practical training, the students attend daily classes in theoretical studies, such as general education, mathematics, physics, mechanics, electrical techniques, drafting and civics.



The new wing of the I.C.O. plant.
Detail of interior.

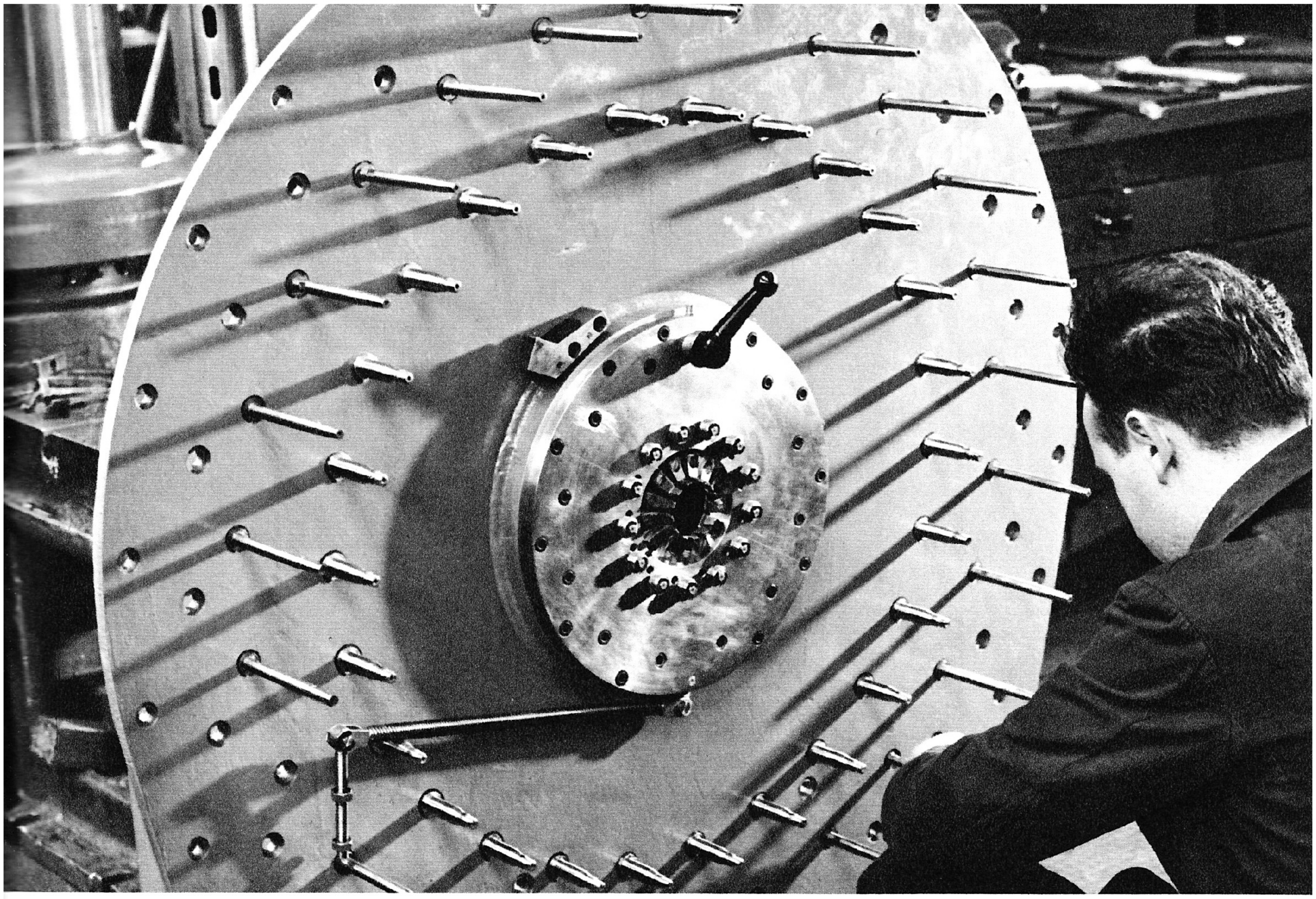
Right. Production: from the furnaces of the foundry to the assembly line.

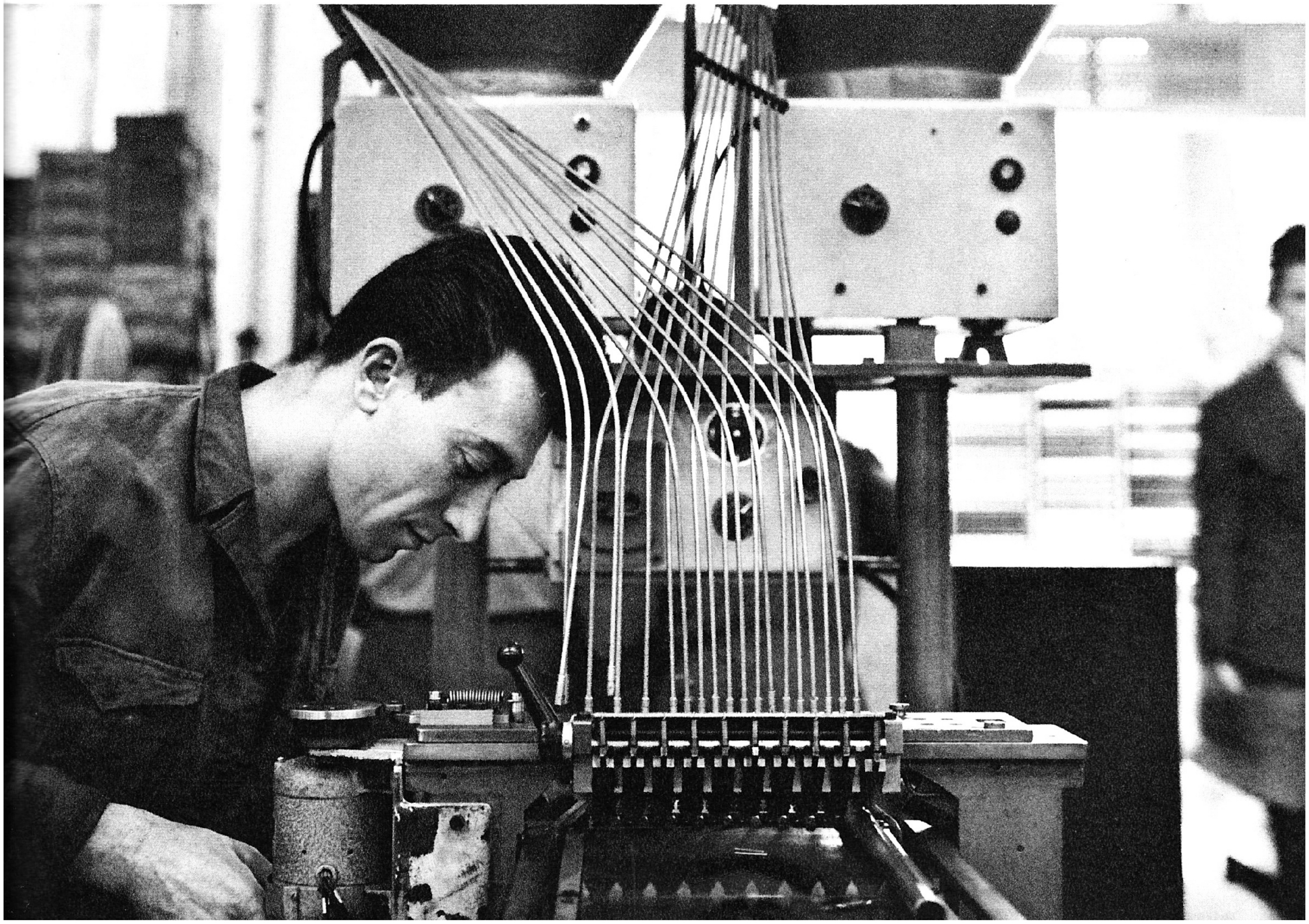


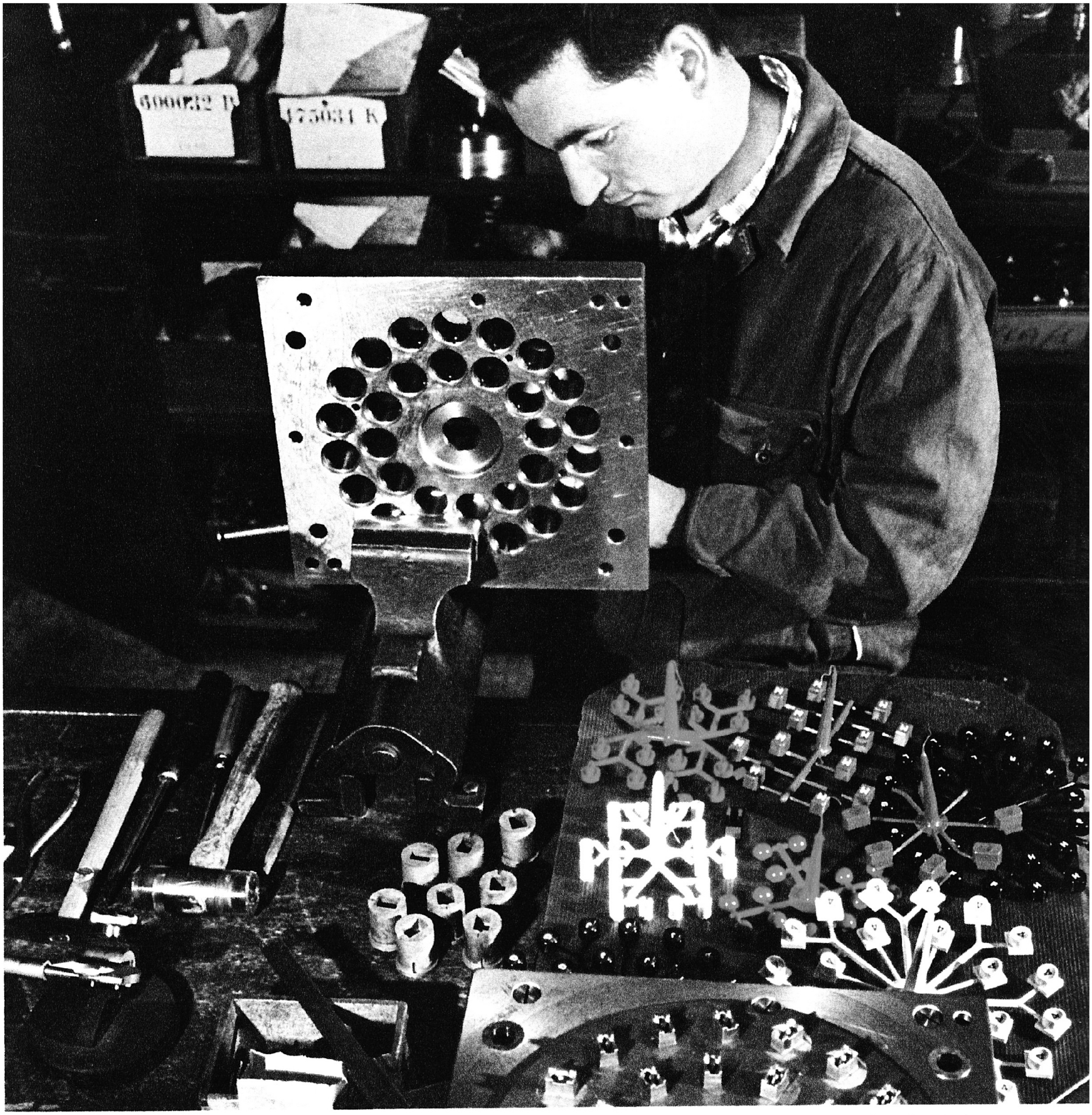
A duplicating milling machine for making the matrices used in pressure molding. A "guide" follows the profile of the model and commands the tool that cuts the matrix into the block of steel.

Right, above. Building a special machine for the Electrical Constructions Department.

Right, below. The machine constructed in the Equipment Workshop, to be used for inserting the tabulator points in typewriter carriage guides.

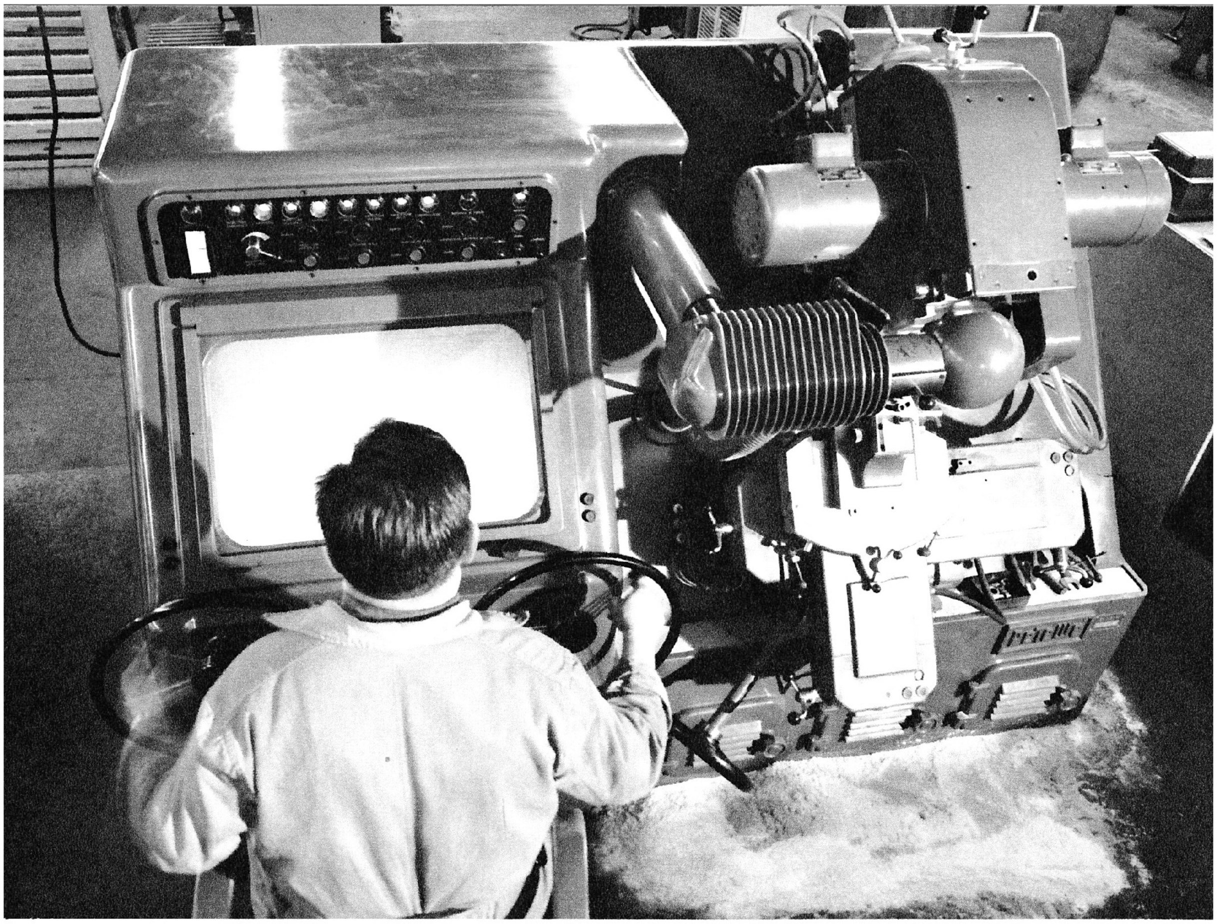


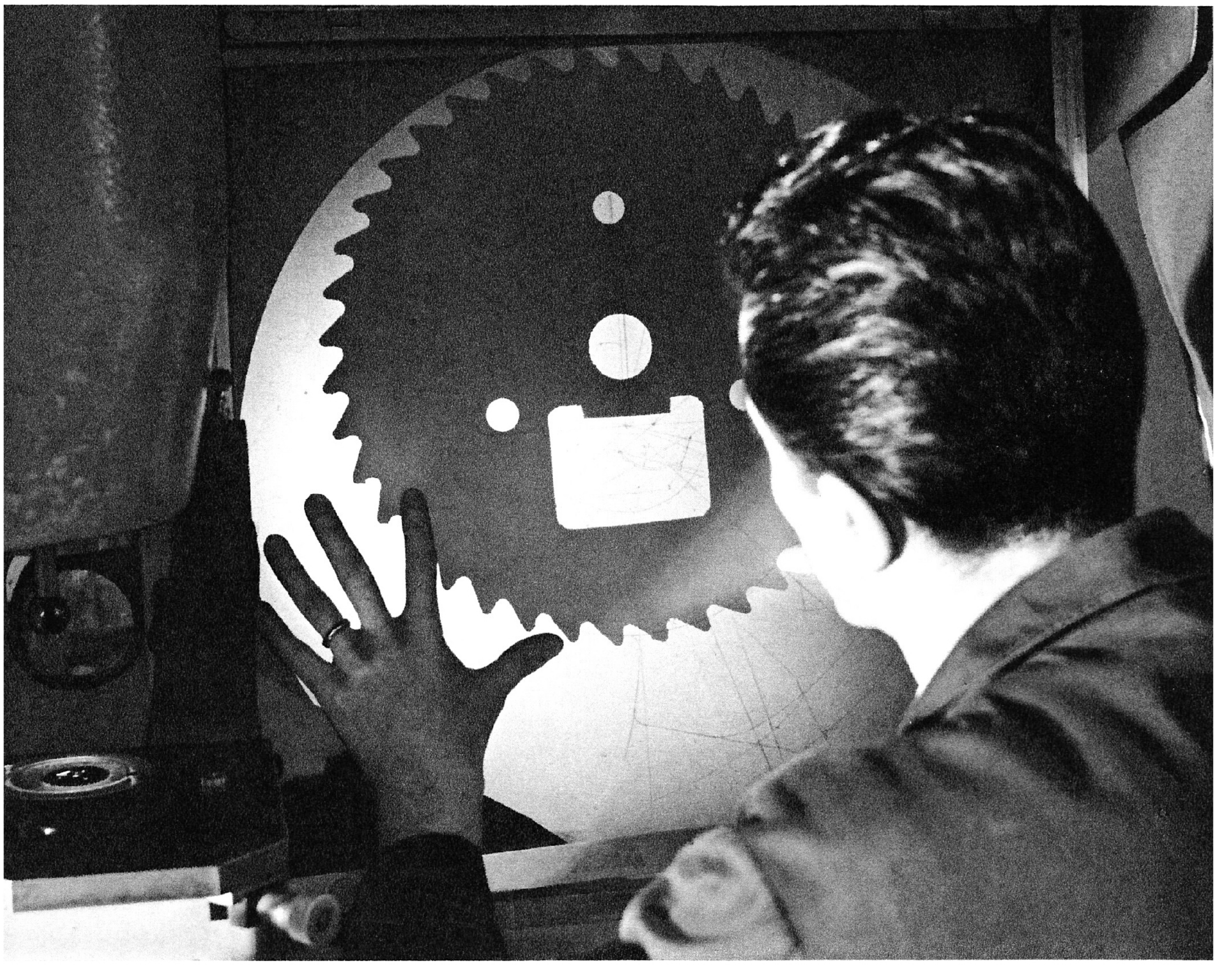




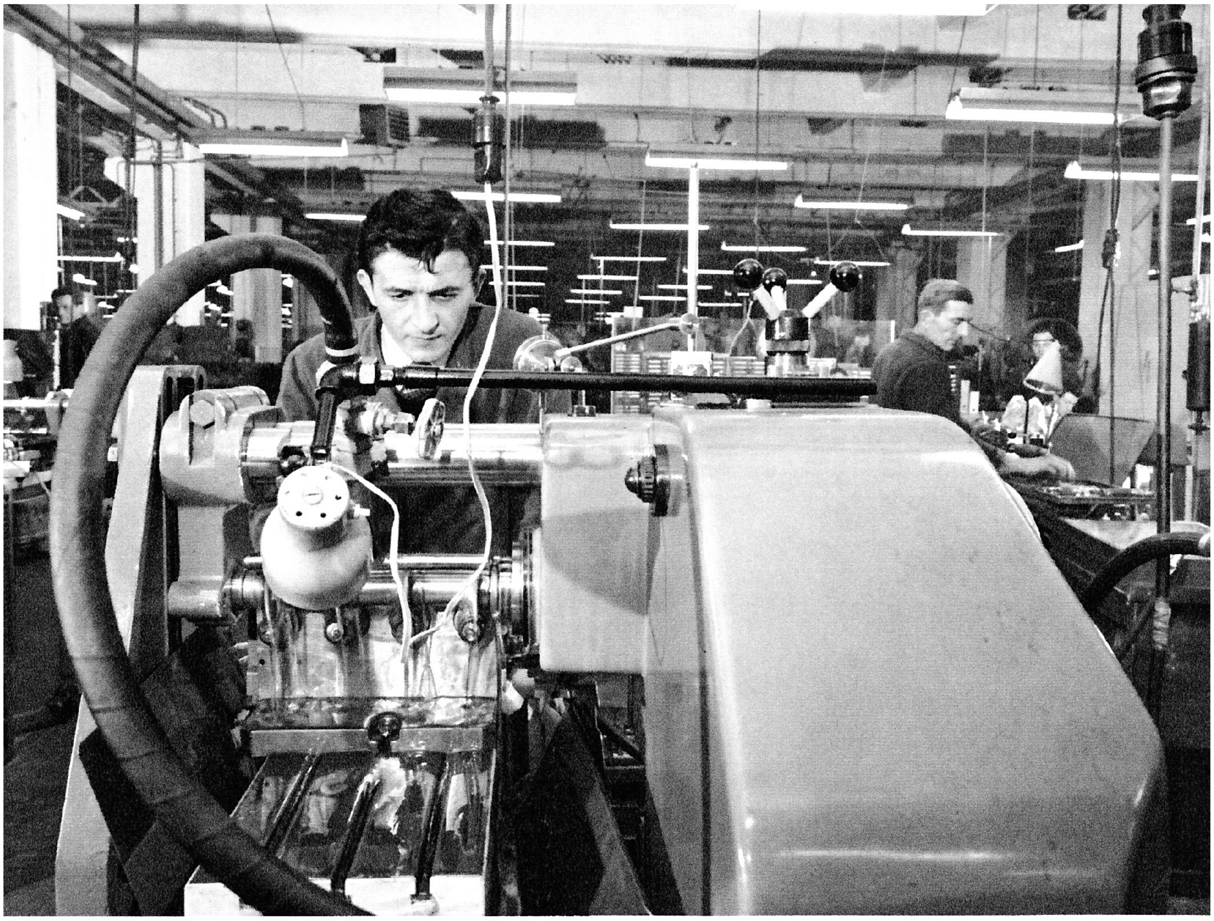
Preparation of matrices for molding synthetic-resin calculator keys and controls.

Right. Machines and equipment in the Precision Department, where gauges, calibers and testing devices are manufactured, and where matrices and tools with very narrow tolerance are made.

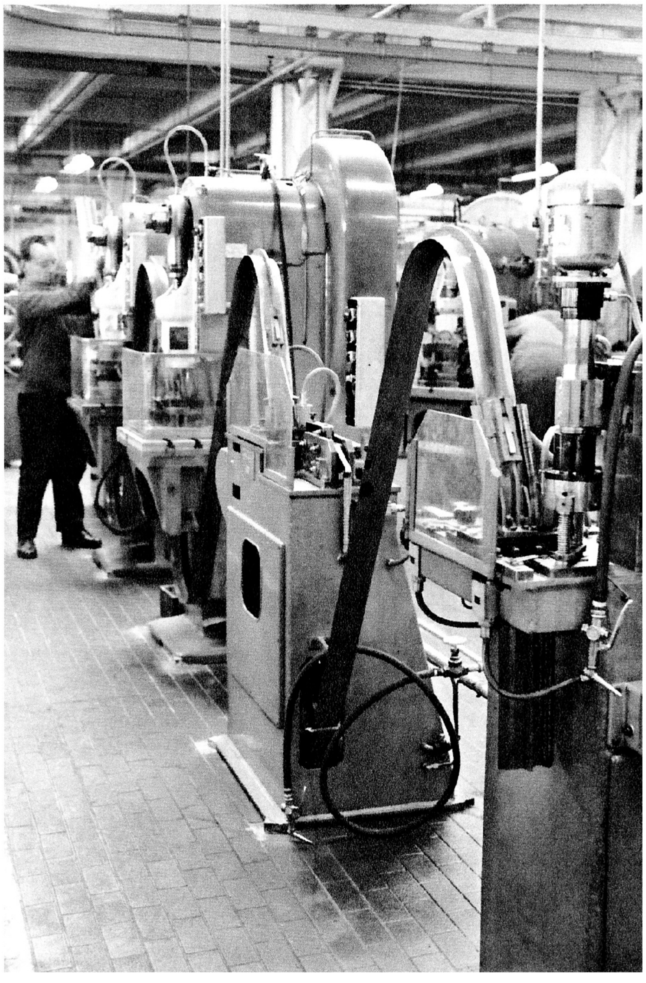




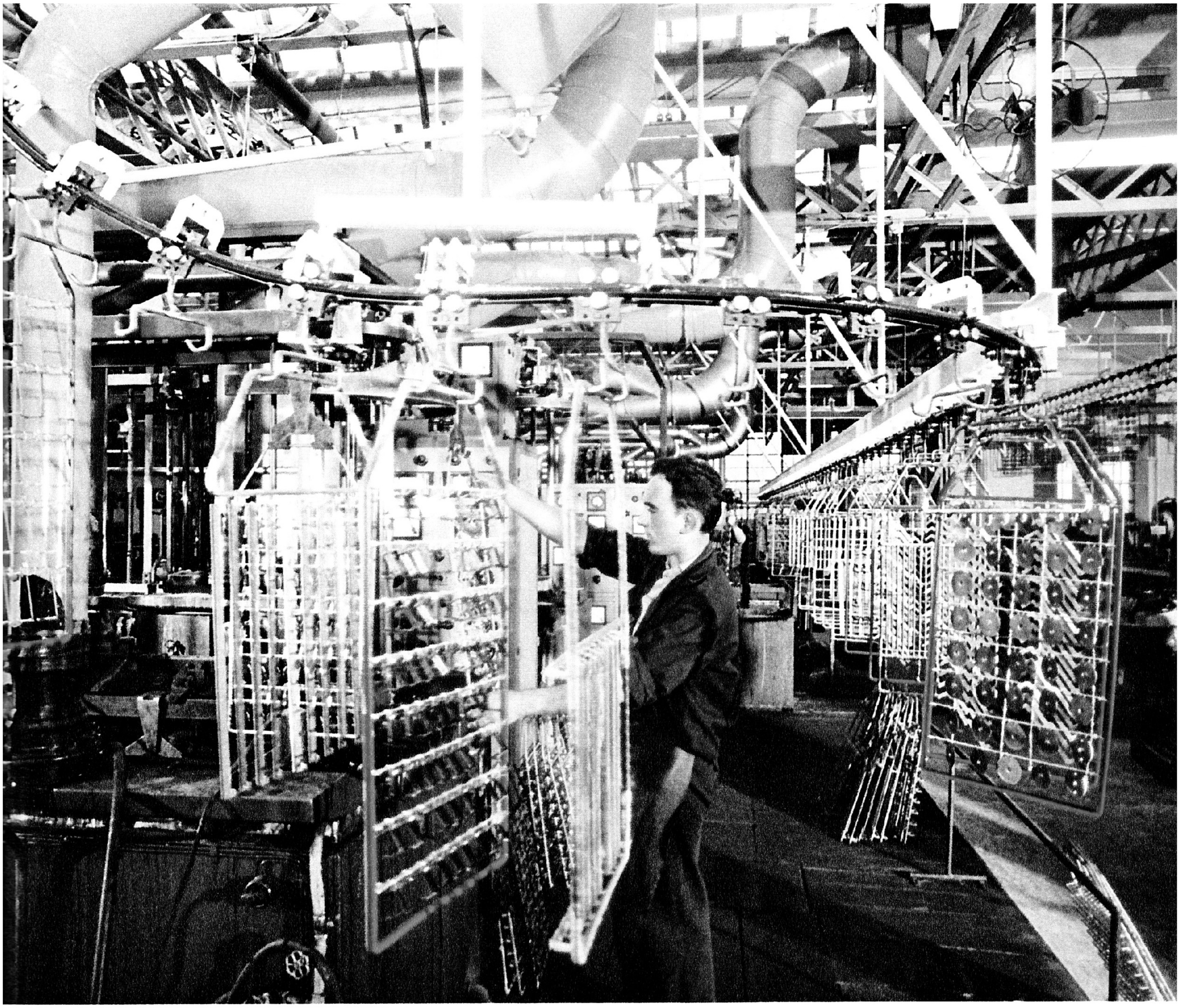
On the production lines, each piece undergoes from four to thirty different operations. Processing systems prescribe the course of each piece from bar or sheet metal to final assembly.



One of the stamping presses on the production line. Its die punches cut typewriter-key levers from sheet steel at a speed of eight to ten thousand an hour.



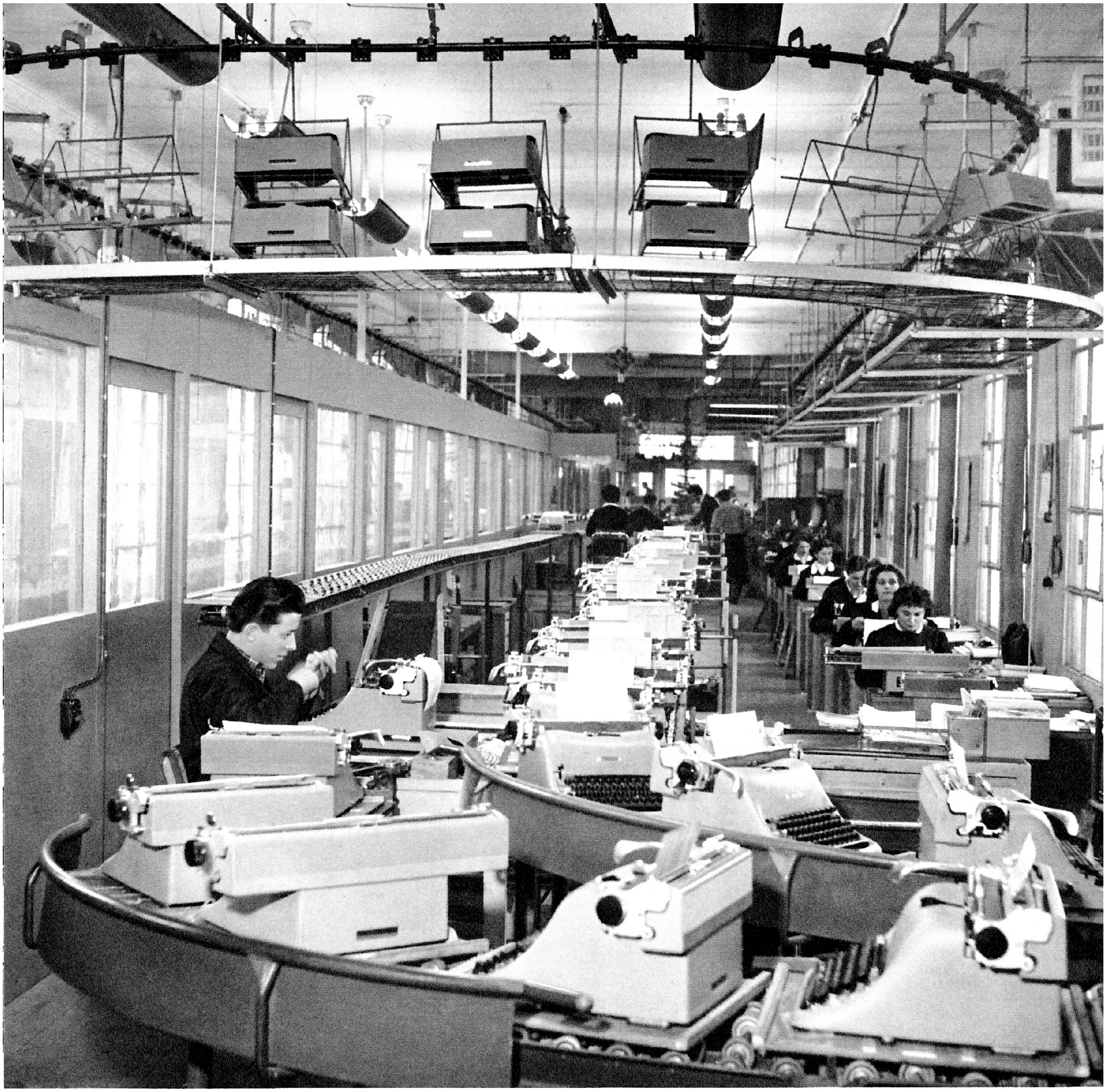
Right. A line of presses, controlled by one man, which automatically transfers pieces from one machine to the next.



A conveyer with frames carrying pieces to the automatic chroming and nickeling machines.

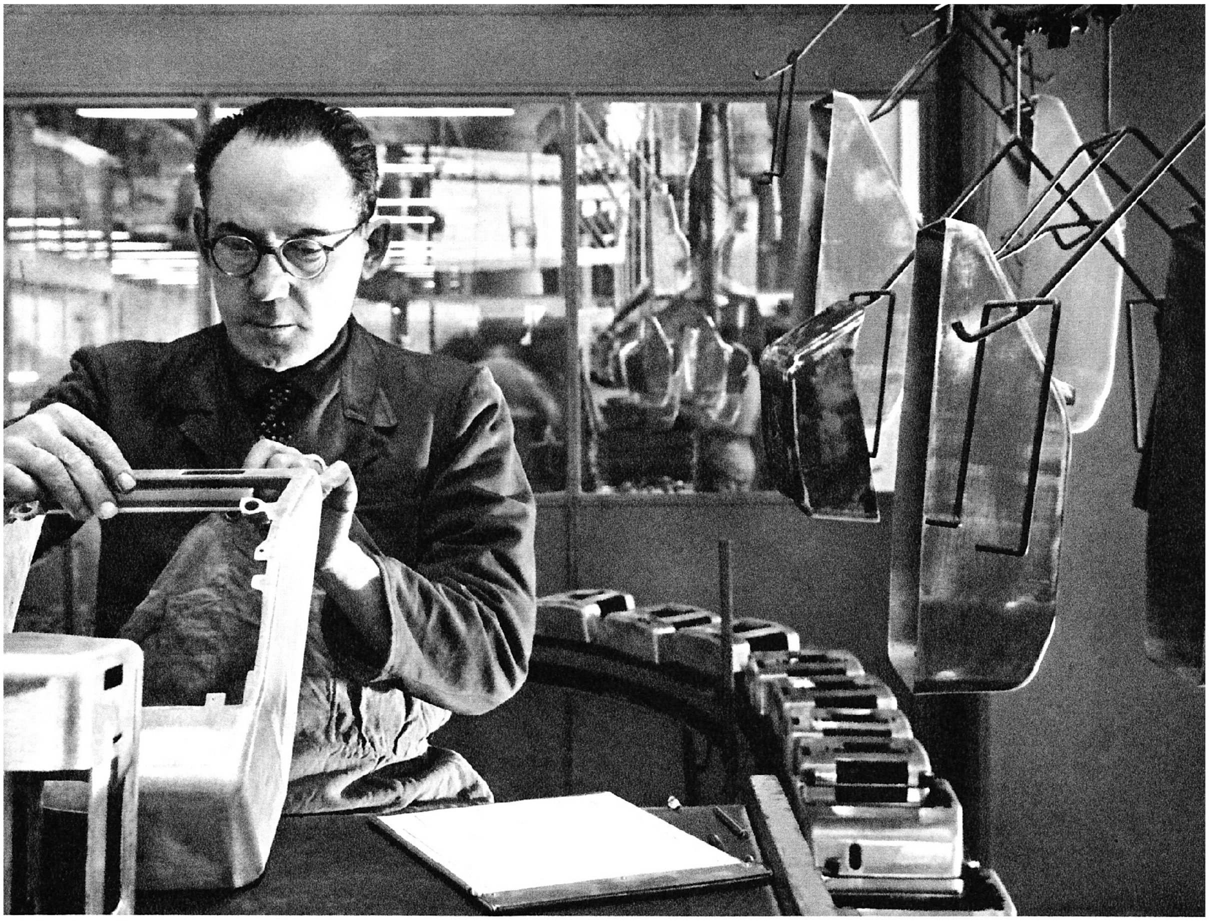
In the electrical constructions department, motors for electrical typewriters, calculators and teleprinters are manufactured. About 700 motors are constructed and tested daily.

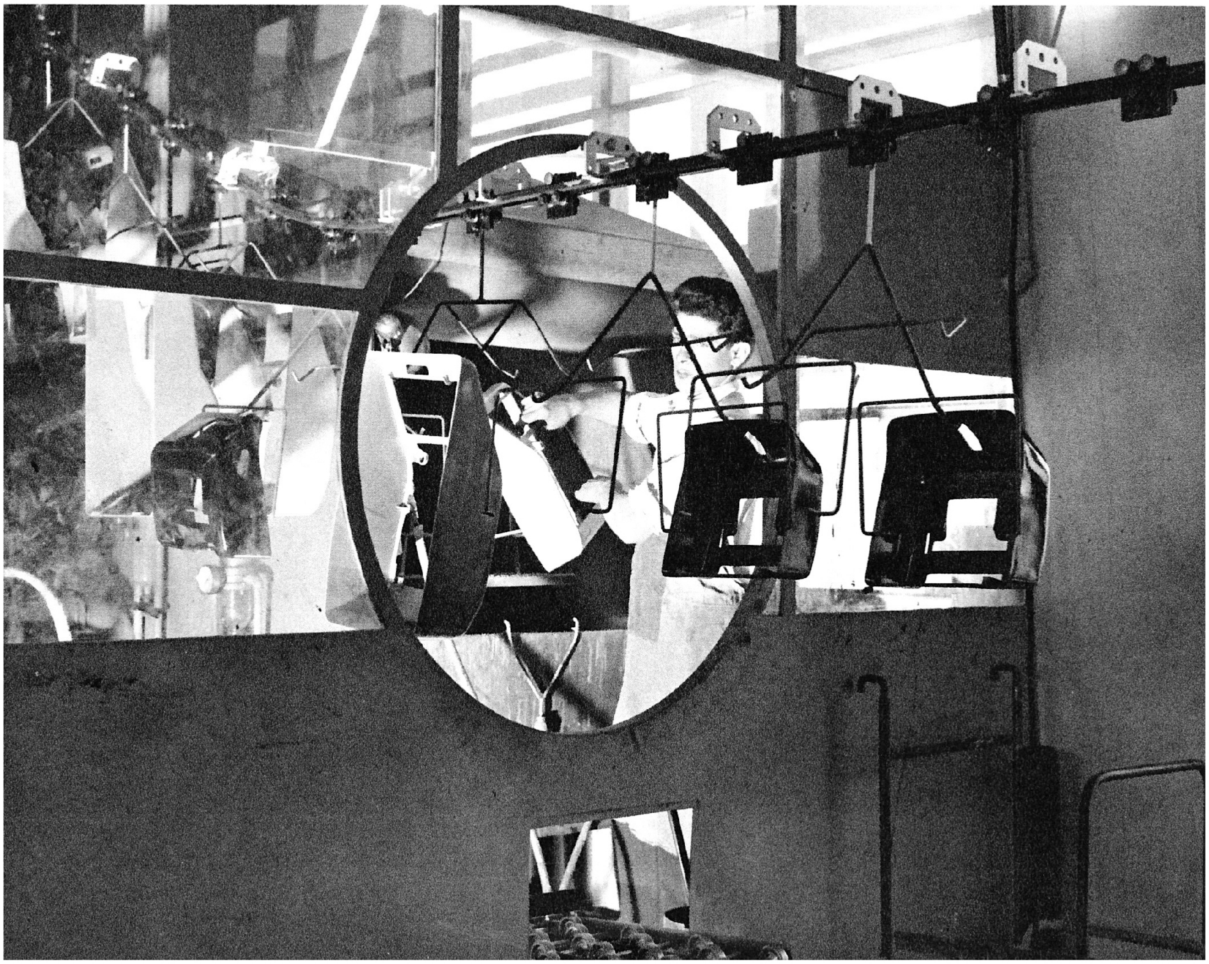
Right. In a division of the assembly department, each machine is alined before its body is mounted and it is sent to be tested.

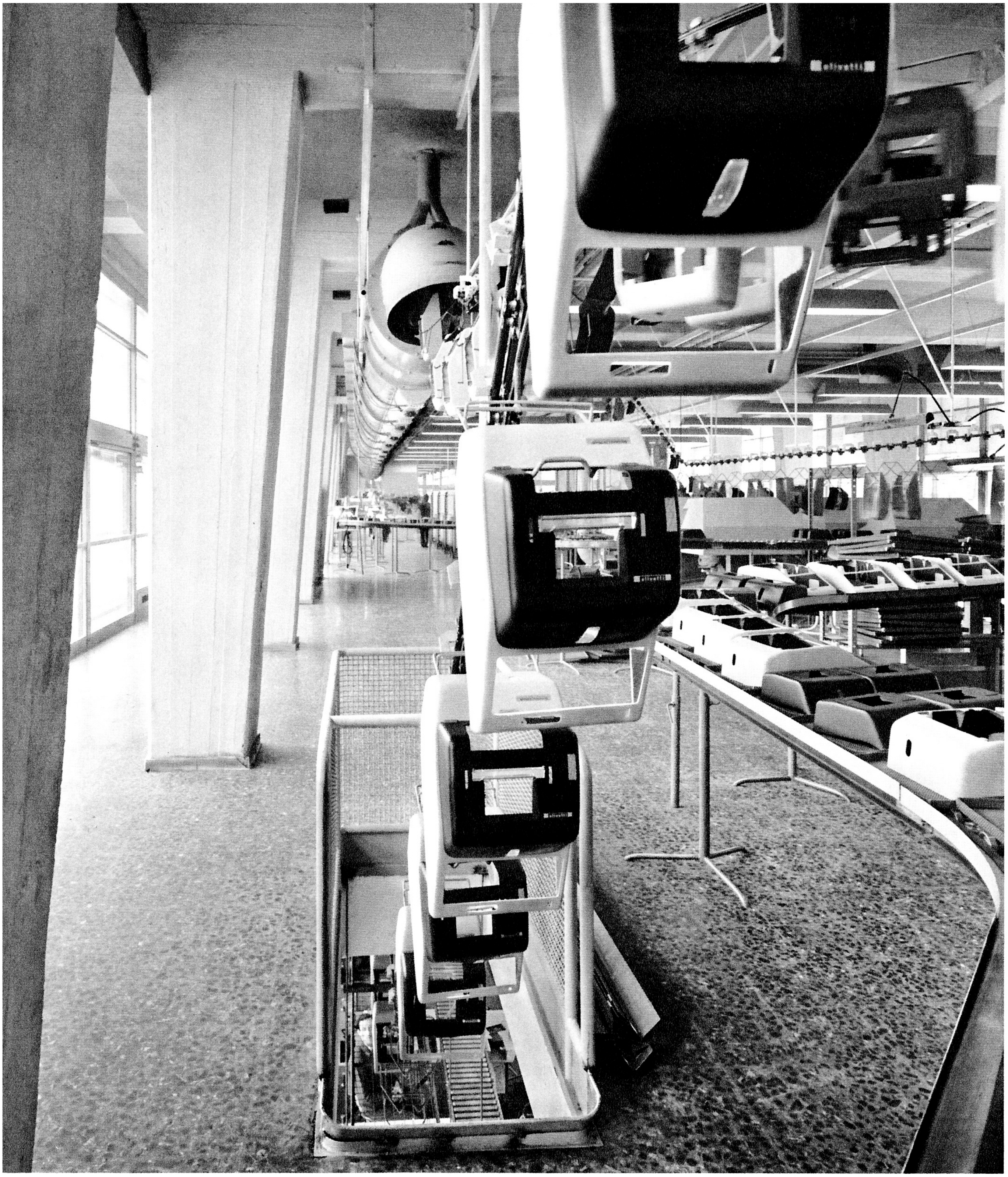


A checking and testing line for office typewriters.

Right. Overhead conveyers carry the body work through the processing divisions to the enameling section.

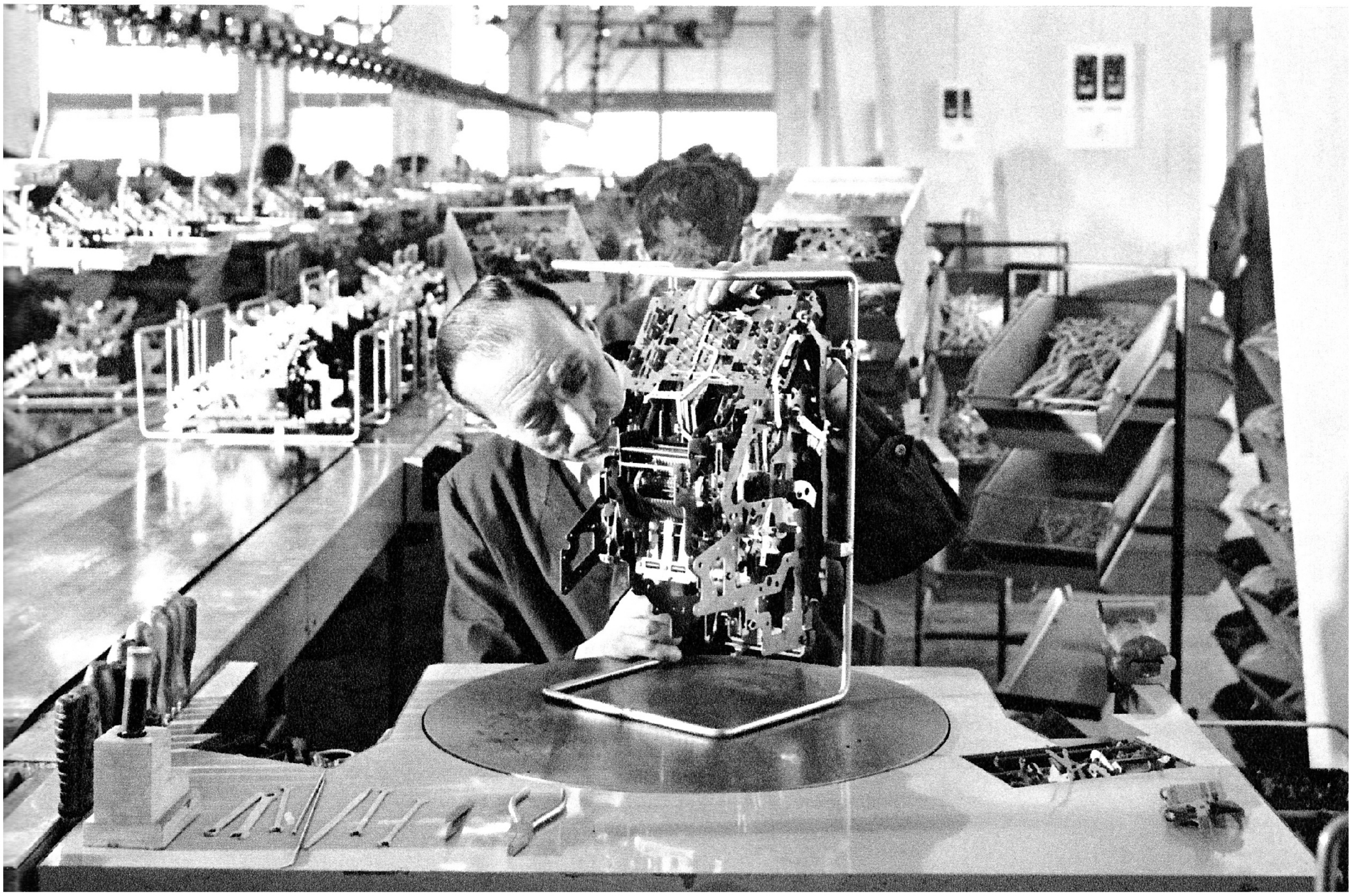


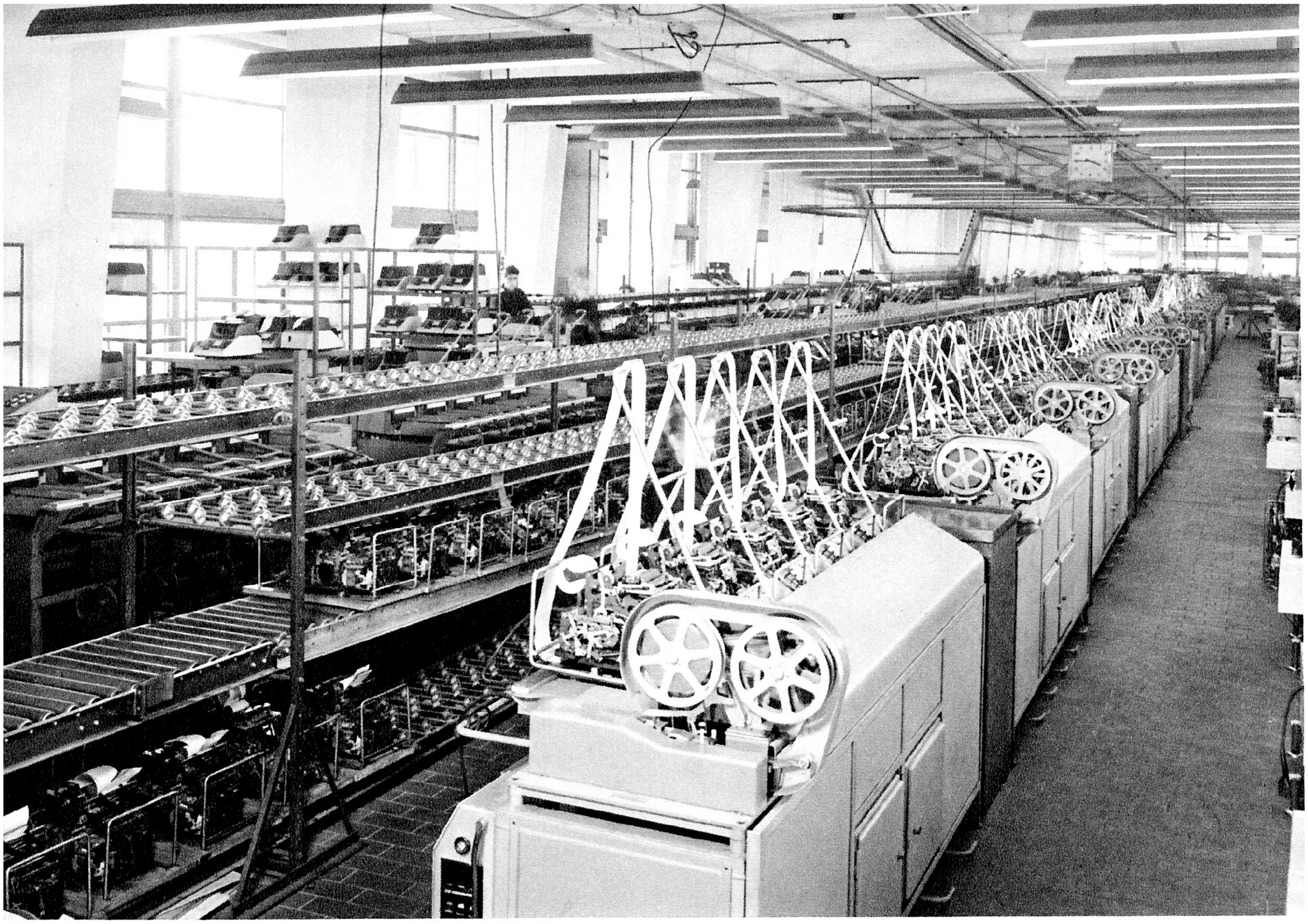




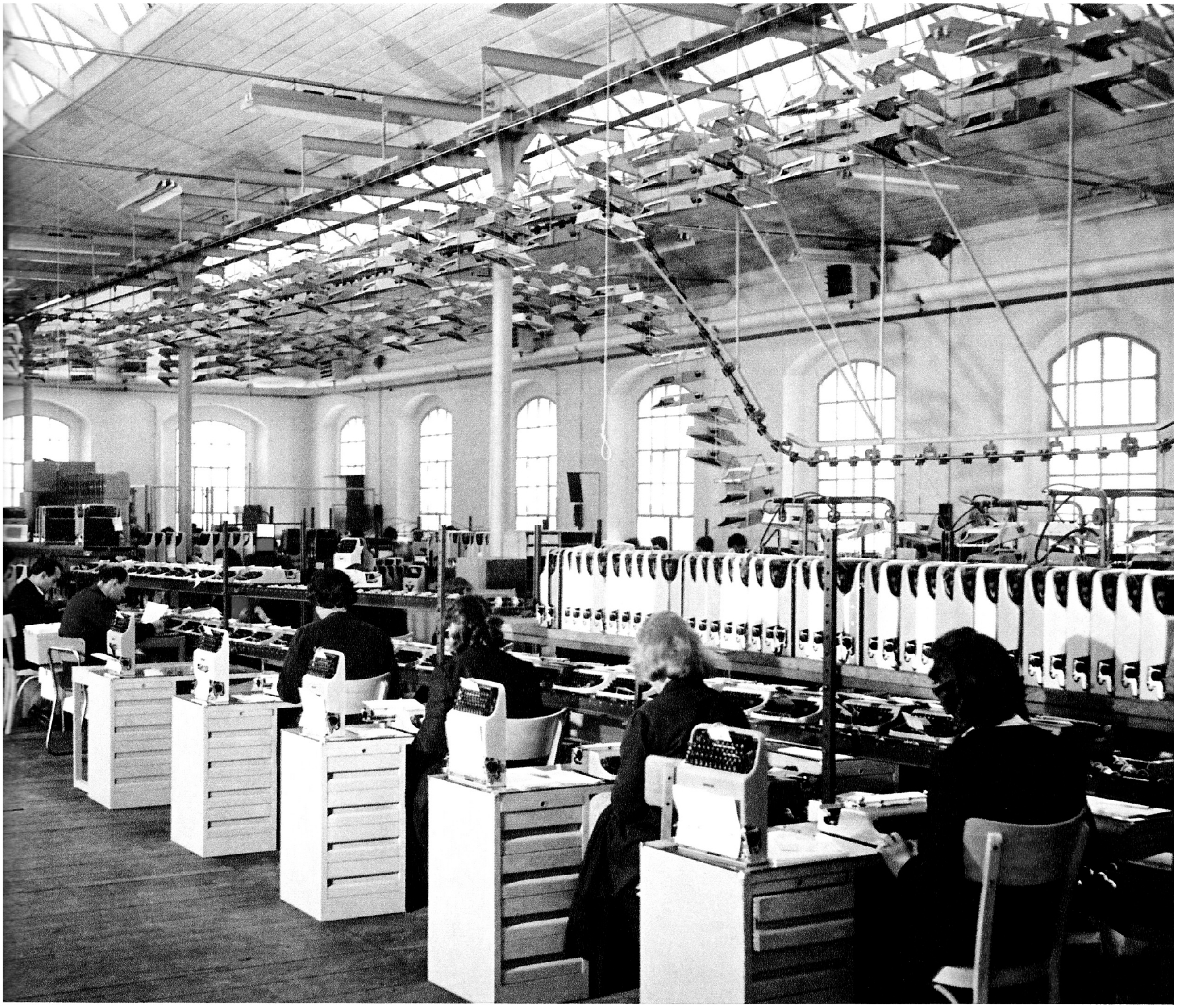
A supply-conveyer also links the enameling section and the assembly division.

Right, below. One of the final phases in assembling a calculator, requiring technical skill, alertness and long experience.

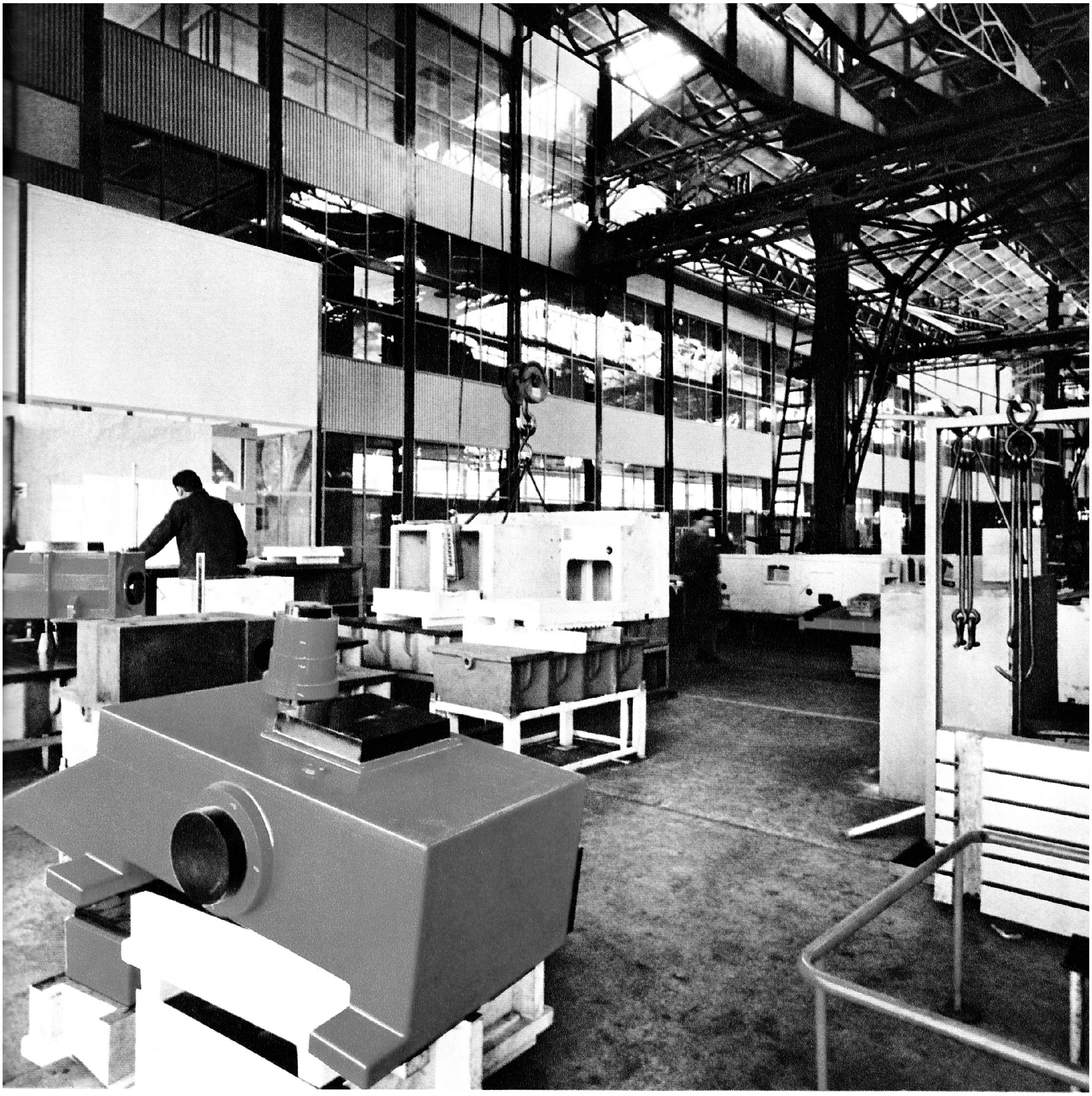




The calculating machines undergo special testing by tape-recorded commands. Each machine automatically performs 400 calculations, on the basis of which its accuracy and steadiness can be checked.



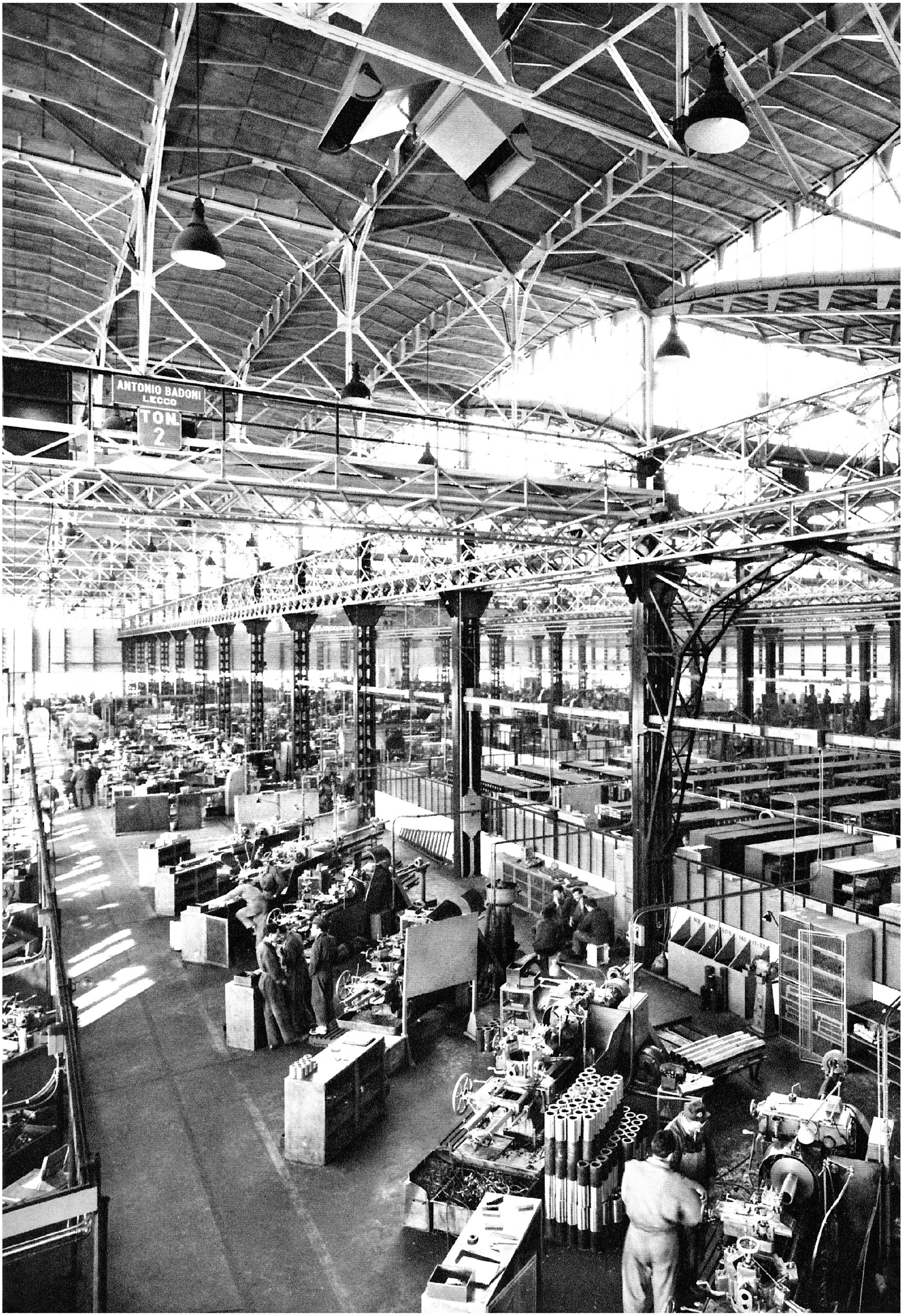
Above and over.
The Agliè factory. Final testing for portable typewriters.



In the O.M.O. factory, at San Bernardo, the heavy processing division builds and finishes frames and bases for machine tools.

Above. Details of entrance and O.M.O.'s Study and Planning Office.

Right. In a bay of the O.M.O. plant light processing is carried out. In addition to 15 types of drills, 8 types of perforating and tapping units, 4 types of multiple drills, cam and planer milling machines, boring and universal grinding machines, O.M.O. produces a large number of multiple-use machines.
New types of machine tools leave the San Bernardo plant almost every day for various uses in Italian and foreign mechanical industries.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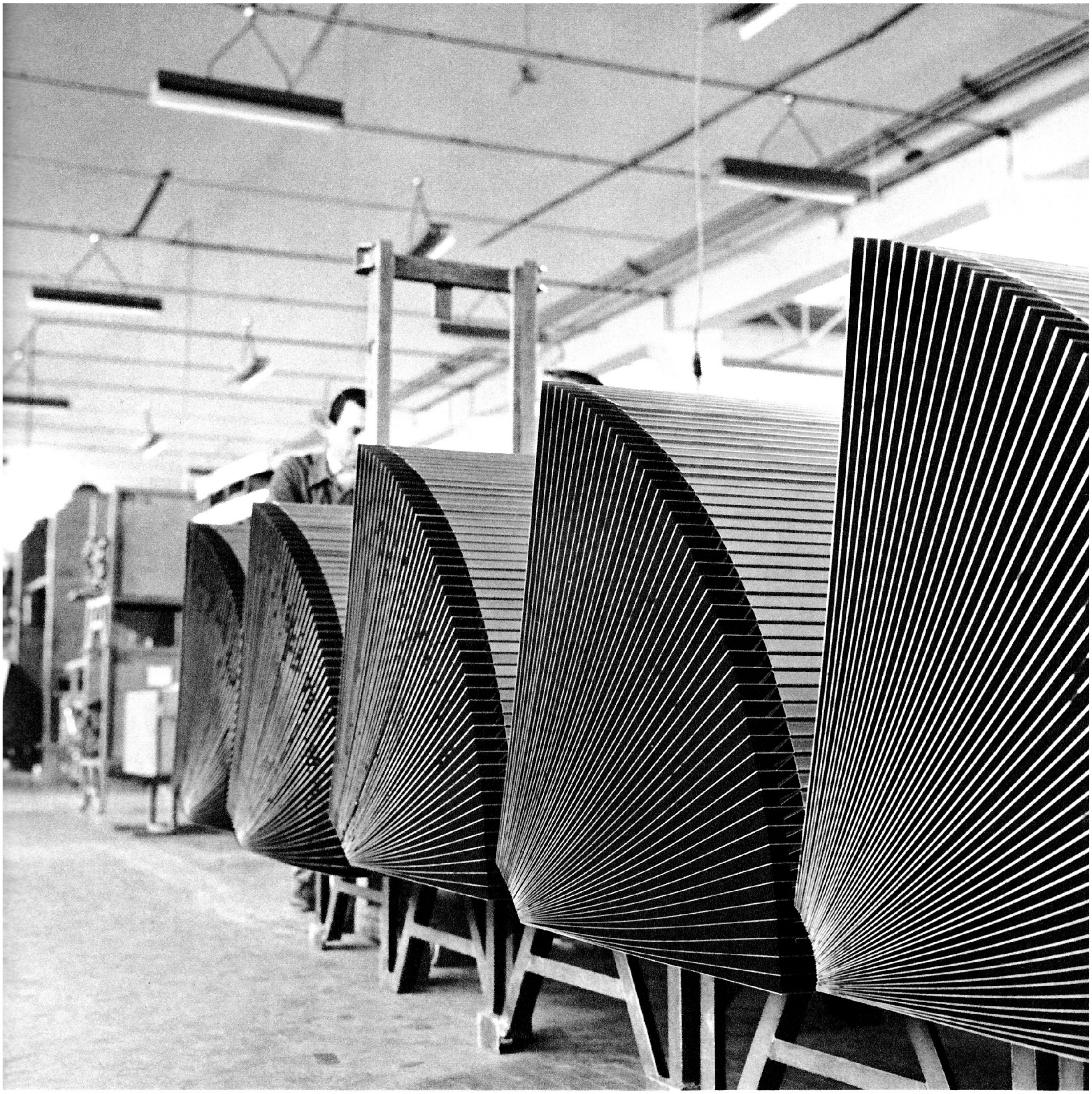
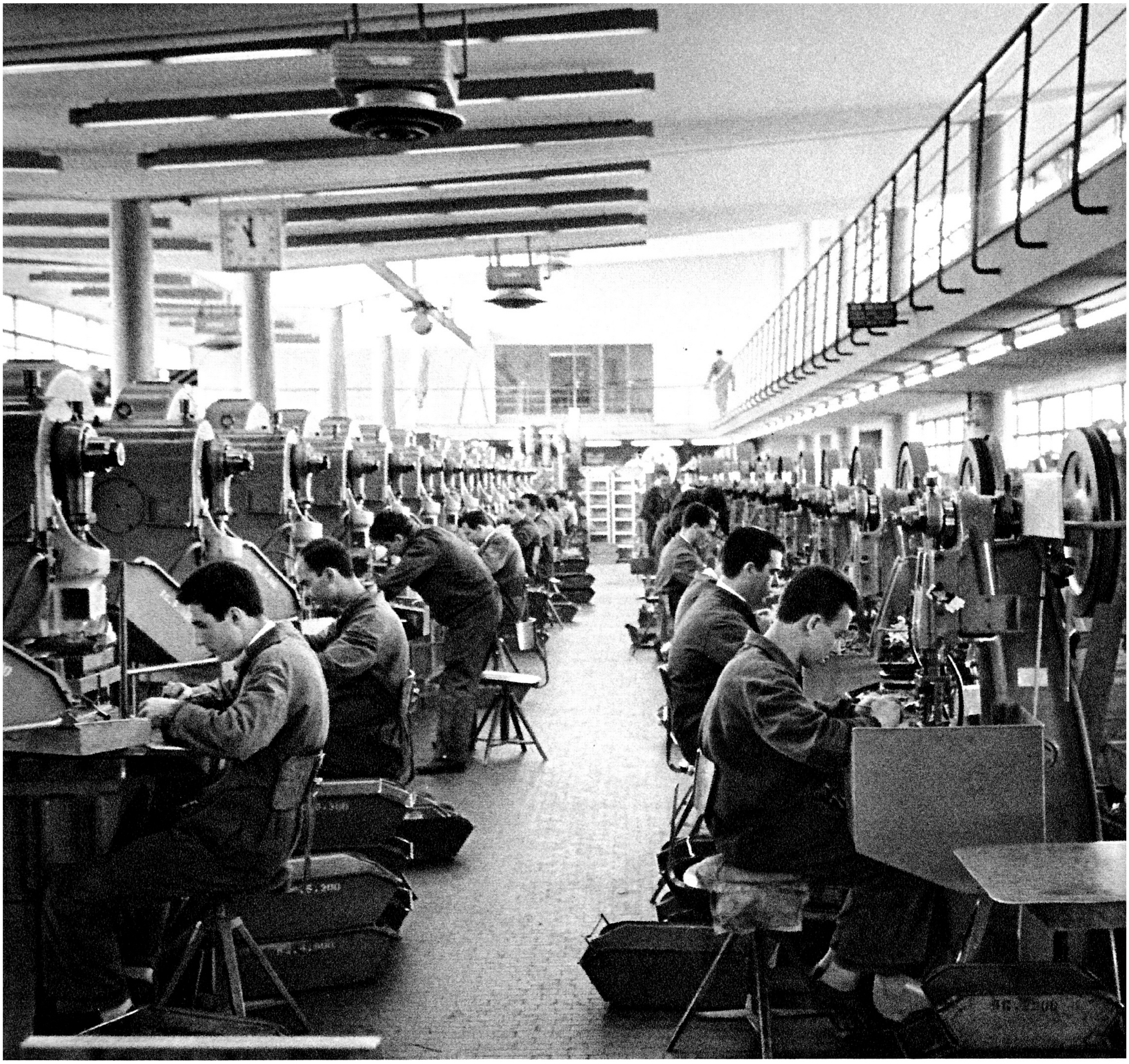


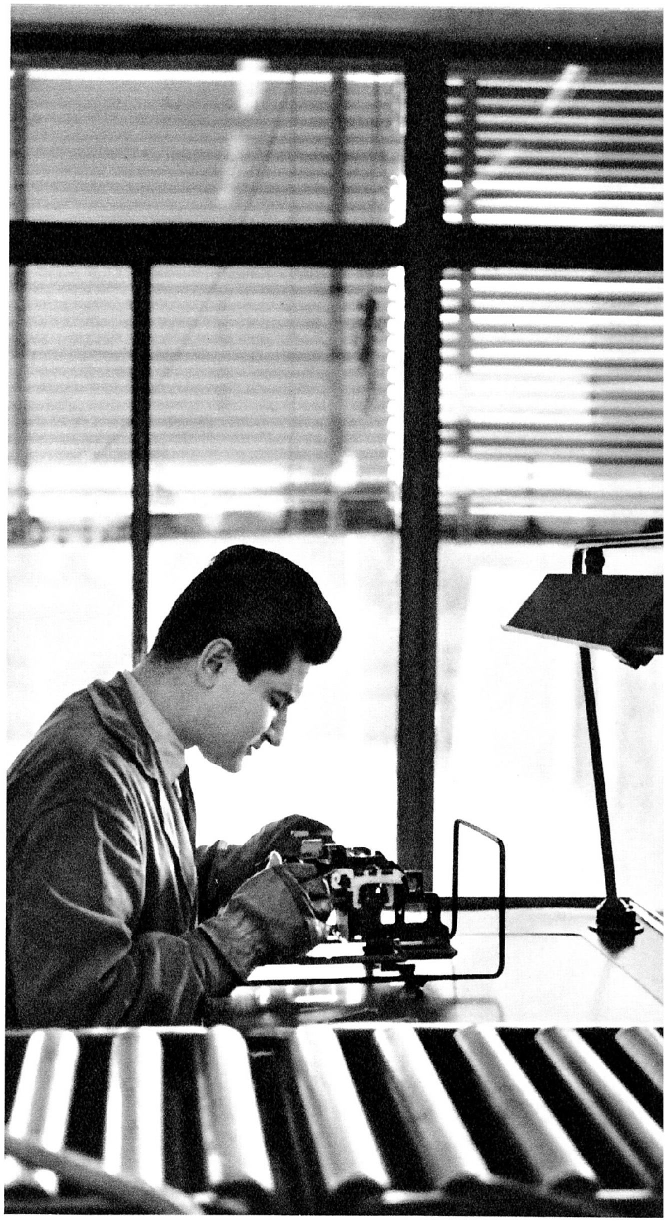
Left. The O.M.O. plant, interior.

Above. Interior view of the Synthesis factory at Apuania, which employs more than 500 persons. Synthesis metal filing cabinets and card files find a wide market in government and private offices as quality office furniture designed for functional filing and classification.

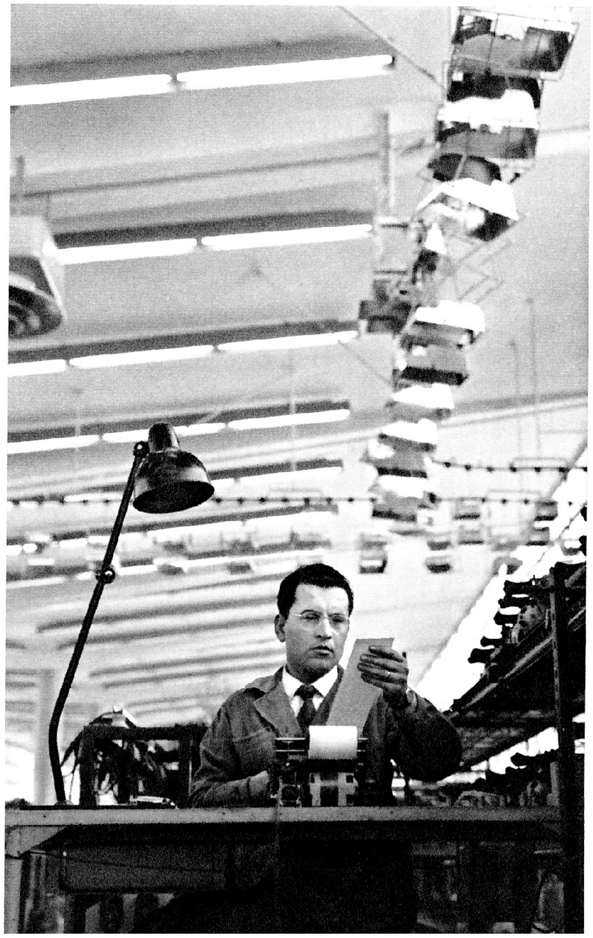


Pozzuoli. The workshop for bending and cutting sheet metal.

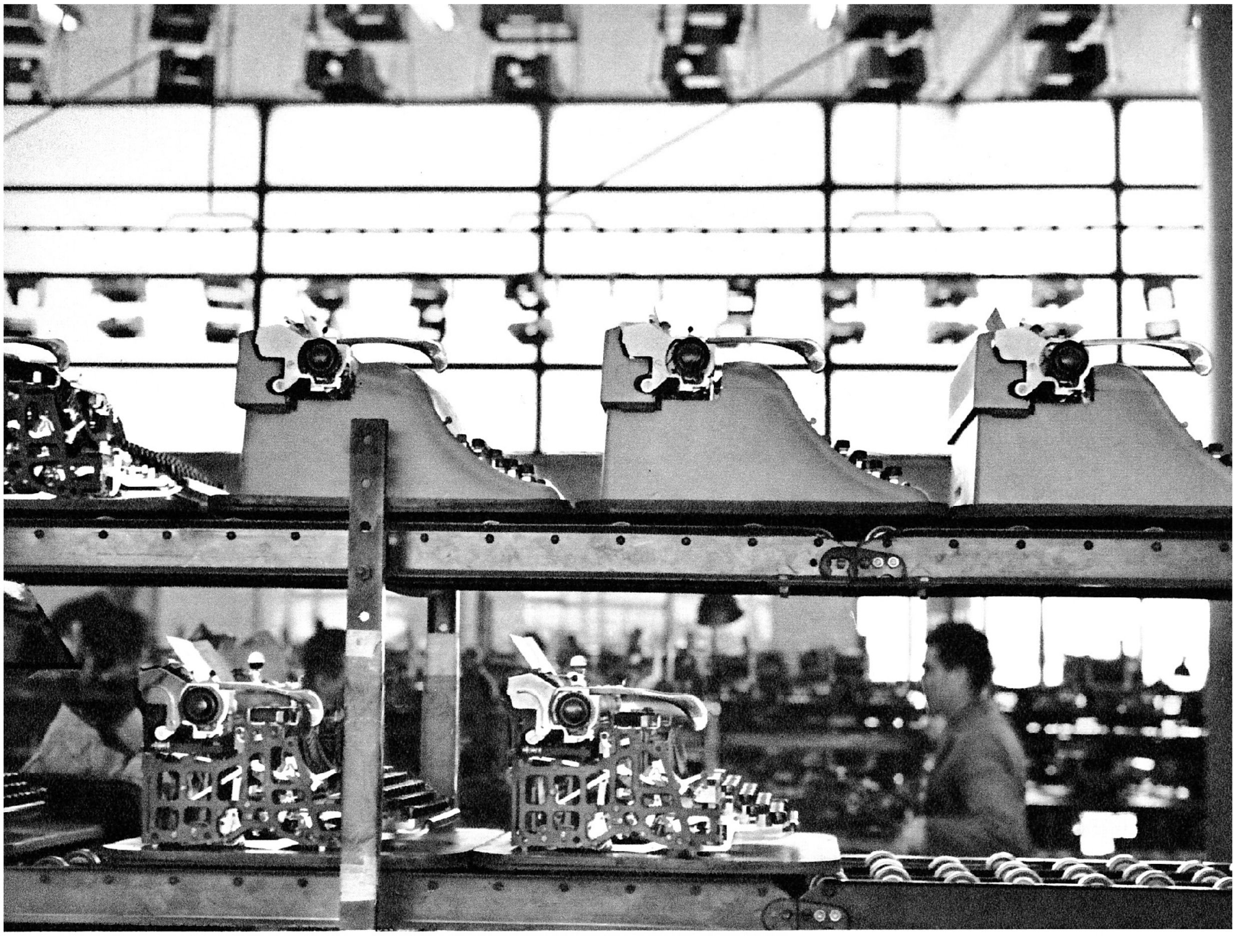
Pozzuoli. Detail of interior.



Detail of assembly line.



Pozzuoli. Automatic and manual checking and testing of typewriters and calculators.



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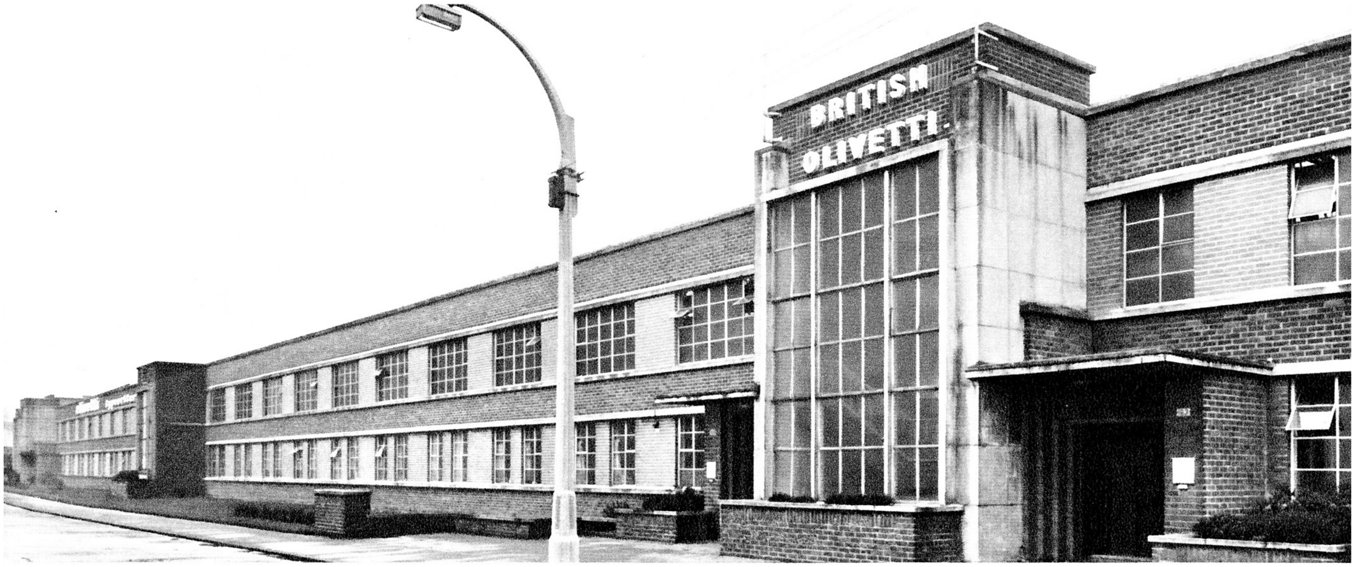
Revision

Barcelona. "Revisión", or checking and testing of adding machines, in a section of the Spanish factory.



British Olivetti, established in 1947, started production in its Glasgow factory in 1949. The year following, the company inaugurated its London head offices, in Berkeley Square. British Olivetti produces portable and office typewriters, which it distributes on the markets of the United Kingdom, along with other Olivetti models and products.

A division of Olivetti Africa, in Fox Street, Johannesburg.
Local skilled workers carry out assembly of office machines.

Social Services

The Olivetti company's first social assistance measures were adopted in 1909, soon after the establishment of the factory. In 1919, before any similar government provision, the system of family allotments was instituted, and the company has continued to anticipate, sometimes by decades, the welfare and assistance programs eventually adopted by the State. The social services have developed in two main directions: first, the gradual establishment and codification of each worker's right to benefit automatically under the various company programs, and second, the creation of wage and hour policies whose most recent and most widely publicized result has been the adoption of the five-day week. At the same time, parallel development of programs going well beyond industrial social services as they are usually interpreted, has included the special training of social workers, the construction of housing settlements, and the drafting of town and regional plans. "Social service functions in the interest of community solidarity. Every worker in the plant contributes, by his labor, to the life of the company and of the various organizations within it. He is therefore entitled, by right, to the assistance he may require, without feeling that he is asking a personal favor." With these words, in 1948, the Management Council, a joint labor-management body, defined the character of the company's assistance program, whose policies are determined by the Council, under the terms of the charter regulating the social services.

Olivetti social service is aimed at providing assistance for every phase of individual and family life. Women workers have nine and one half months maternity leave at full pay, while a pediatric clinic and a day center for children, from the age of six months to six years, are available in Ivrea. After-school activities for high-school students have been organized by the company, which has also helped the town arrange similar activities for grade-school children. In addition, holidays for workers' children are provided at summer camps at Marina di Massa, on the Tyrrhenian sea, and at San Giacomo di Champoluc in the Val d'Aosta. The permanent camps and regular camping trips in Italy and abroad are intended to give young people the experience in independent group living that is not usually provided by the pattern of Italian life. With minor local differences, the same services for mothers and children as at Ivrea, are available at Agliè, Turin, Apuania and Pozzuoli, as well as in the Olivetti factories abroad.

The Olivetti school offers a five-year course for students holding a high-school diploma or an elementary technical-training certificate. Selected on the basis of entrance examinations, the students receive a technical-training diploma on successful completion of the course, and are then eligible for admission to the Technical Institute, which is also free and has state accreditation. Most of the textbooks and notes used by the students have been written by the teaching staff and published by the school itself. Through a system of scholarships outstanding students may continue their studies up to and including the Turin Polytechnic, where they may take a degree in engineering. The Olivetti School also offers advanced training and night-school courses for adults.

Basic factory services include eleven bus lines for workers who commute to Ivrea from outlying districts, and the extensive cafeteria facilities of the plants at

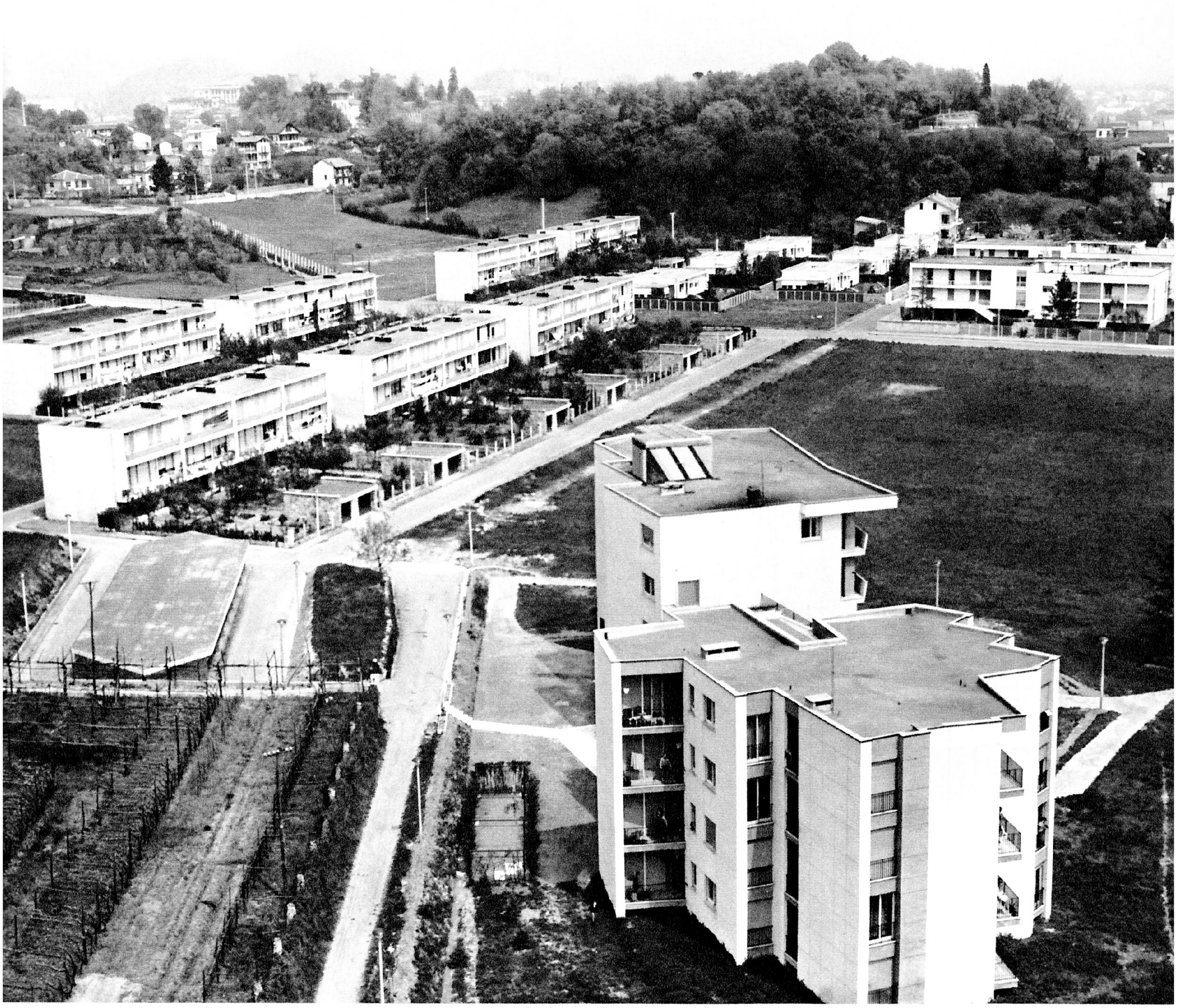
Ivrea, San Bernardo, Agliè, Massa and Pozzuoli. One of the most important problems dealt with by the social services is that of housing. With the rise in population that accompanied the development of the industry in Ivrea, the problem became urgent. The social services sponsored the construction of private houses and of housing settlements, each designed in accordance with organic town-planning principles, and provided technical and architectural assistance. The first multiple dwelling was constructed in 1940 and 1941; since the war two entire residential neighborhoods have been built at Canton Vesco and Via Castellamonte. These developments consist of two-, three- and four-storied buildings and single-family houses. Housing is assigned to applicants by a special committee. Employees may also obtain long-term building loans, and to date almost two hundred and fifty private homes have been built under this plan. As at Ivrea, though on a smaller scale, a housing settlement has been constructed at Pozzuoli as an organic complement to the industrial plant.

A broad program of cultural activities also forms part of the company's social service. The Olivetti library, open to employees and the people of Ivrea, has thirty thousand volumes, of which six thousand on the average are withdrawn every month. The Olivetti Cultural Center organizes lectures, debates, concerts, film showings, lecture courses and art exhibitions that often attract national attention. In addition, there is a bureau for studies in social relations, and a group which organizes and co-ordinates free-time and sports activities.

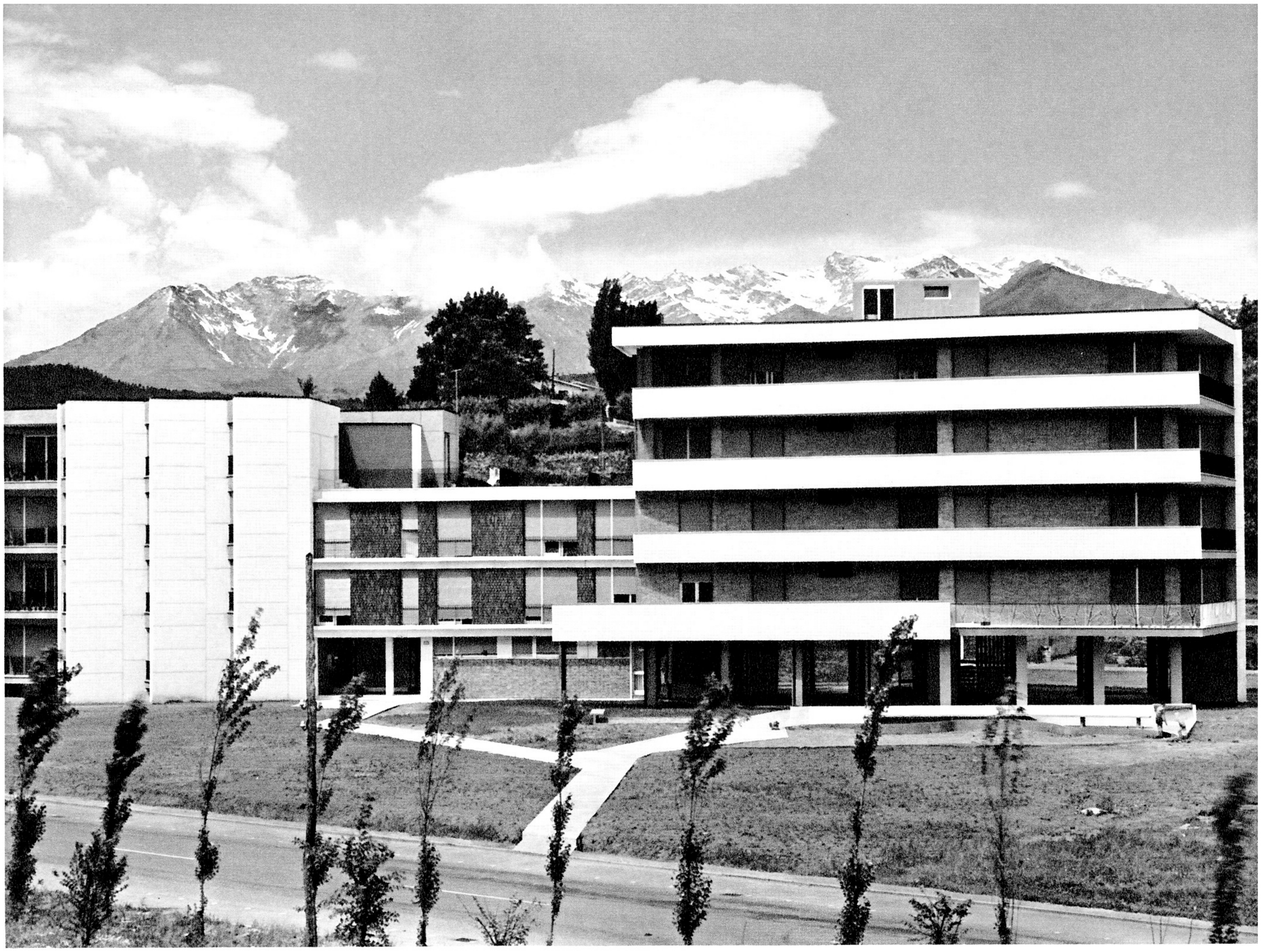
The health services are designed to supplement the government's health insurance regulations. Medical care in the infirmary and at home is provided by a large staff of physicians, specialists and consultants. The service places particular emphasis on preventive medicine, and is responsible for hygienic conditions and safety campaigns in the factory. The factory is well equipped to meet the normal medical needs of all employees and their families. A permanent convalescent home, situated in the hills a few miles from Ivrea, is also available, free of charge for two weeks or longer.

Special types of assistance, going beyond the provisions of the national insurance programs, are financed by a fund administered by the Management Council to which management and labor contribute jointly. In individual situations that cannot be resolved under the company's regular assistance system, consultation is provided by a special social-assistance office which co-operates with the personnel office in cases concerning job placement and transfers. The social-service standards evolved in Ivrea have been extended to the other Olivetti factories in Italy and to the sales organization. Similar standards have been adopted by the associated companies in Europe and the rest of the world.

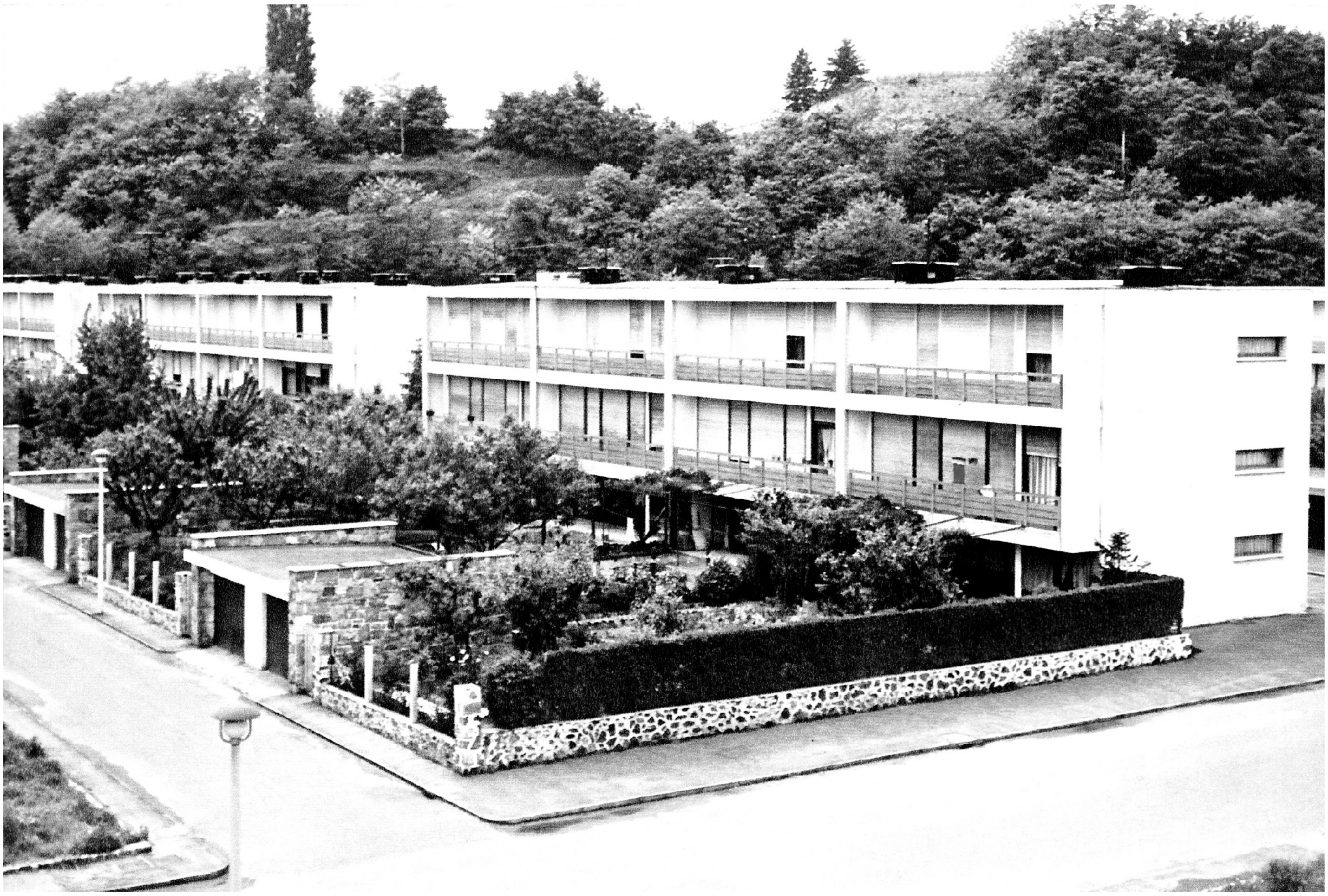
It is a fundamental concept of the social services that the worker's period of productive activity is only a part of his complex life in the human community. The aim of the services is to help give that period of active labor the fullest possible meaning for the individual and the community. Production cannot be seen merely as a force that brings men and women to the machines and work benches in the morning, and releases them at evening. In its highest terms, it is collective creation, and in its ever increasing importance for the economy it carries weighty moral and civic responsibilities for the community as a whole.



Housing in Ivrea, designed by Figini and Pollini, Nizzoli and Oliveri. The first unit, for 24 families, was followed by a group of seven dwellings.
After the war, six one-family and two four-family houses were added.

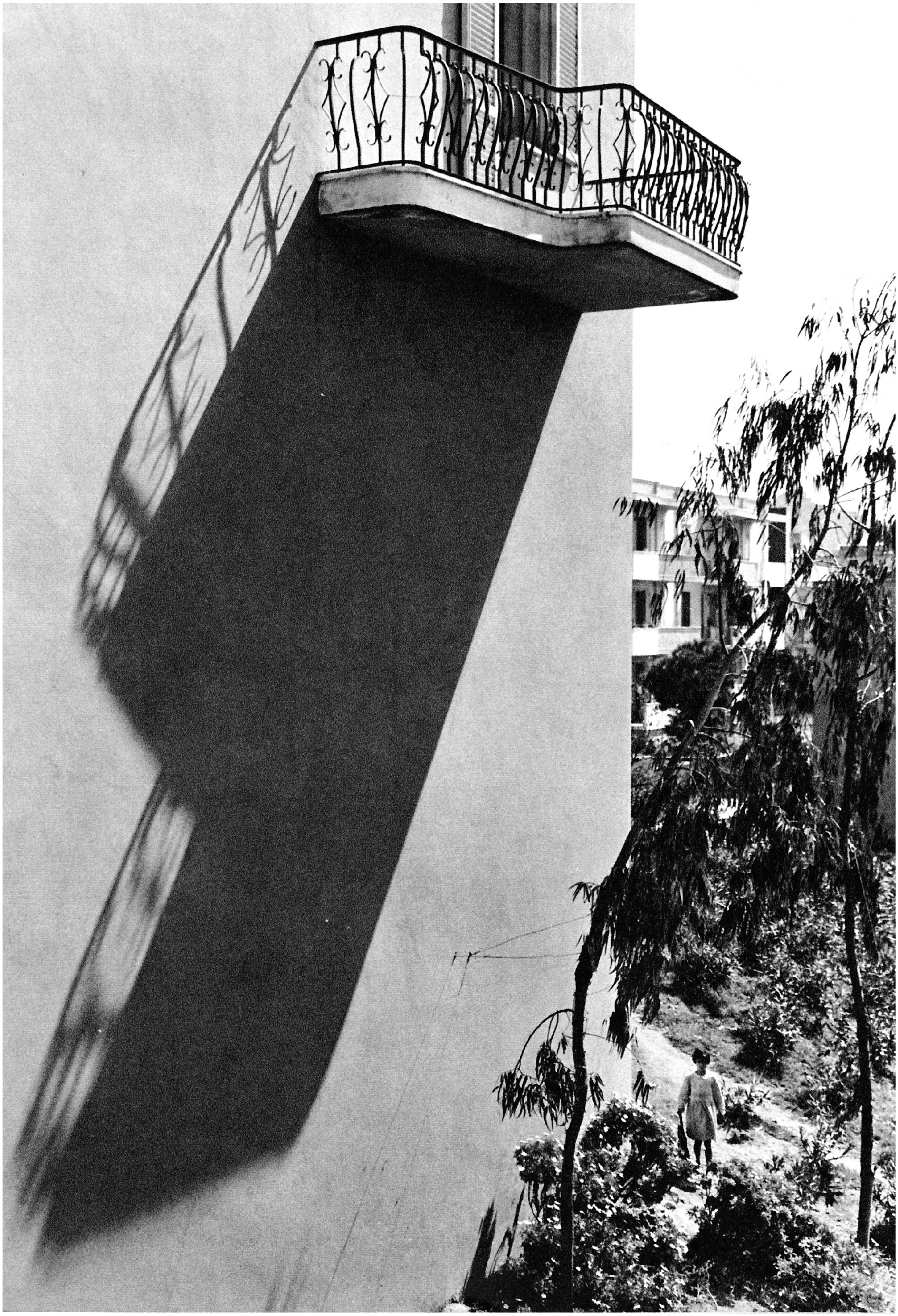


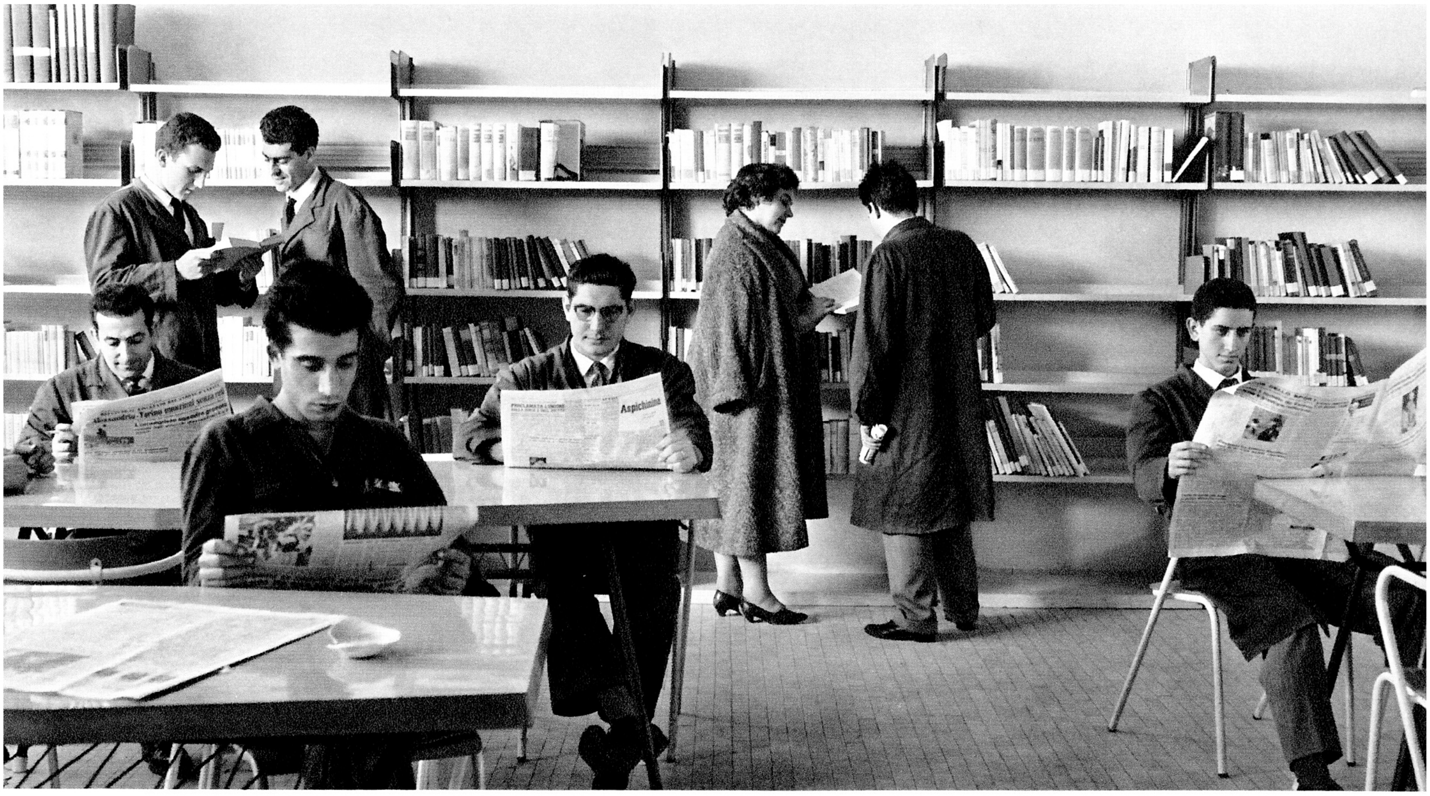
An 18-family apartment house by Marcello Nizzoli and G. M. Oliveri in the residential area of Via Castellamonte. The area today houses more than sixty families.



Housing in the Canton Vesco neighborhood, financed by the Olivetti company and public agencies, provides about 250 dwellings, comprising more than 1,200 rooms, and accommodates one eighth of the Olivetti factory staff. Initial construction of two multiple dwellings by Sissa, in 1943, and two by Lauro, in 1946, was followed by Fiocchi and Nizzoli's present comprehensive building program for an organic residential complex.

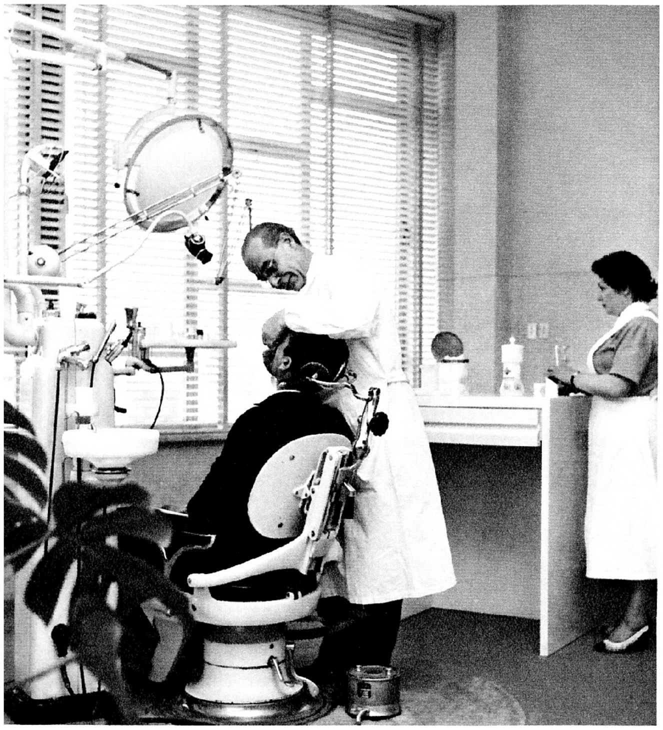
Right and over. Employees' housing at Pozzuoli. Architect: Luigi Cosenza.

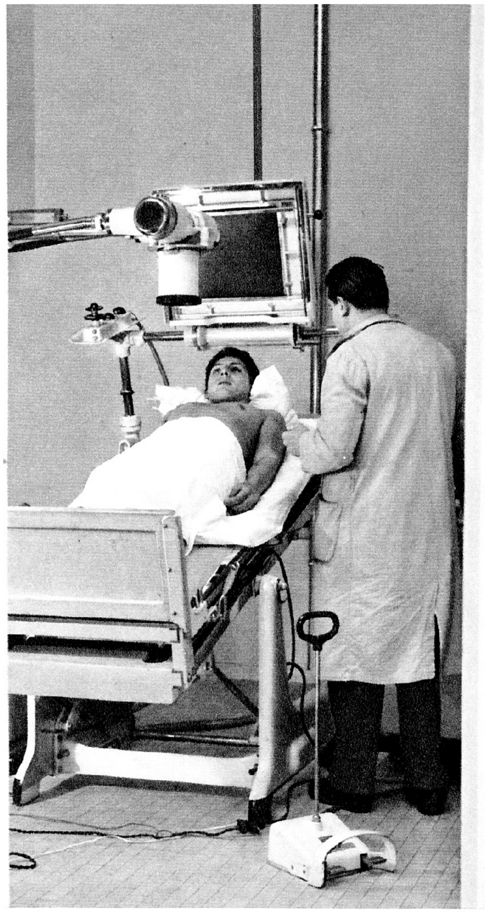


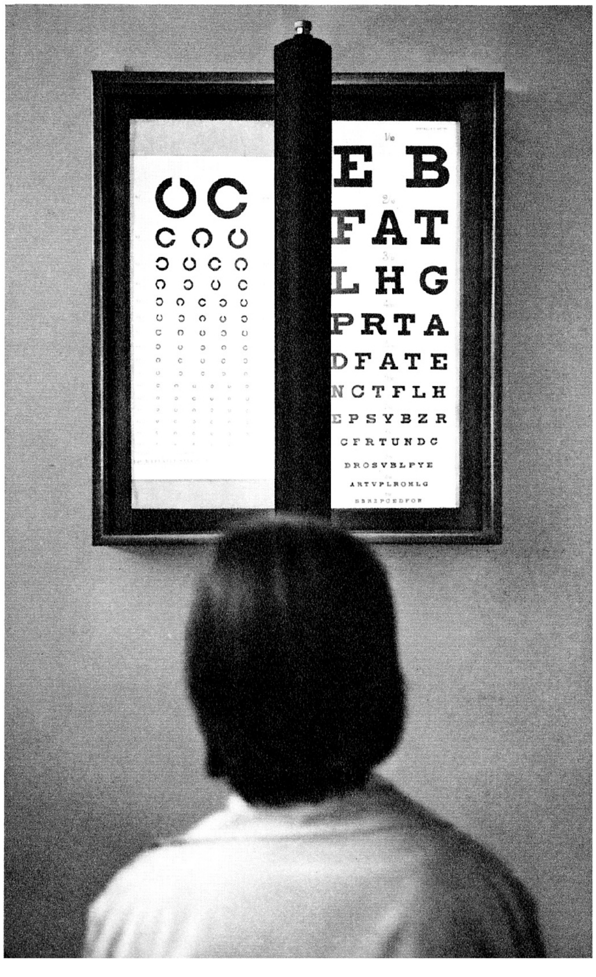


The factory libraries offer books (more than 30,000 volumes in the Ivrea libraries alone), magazines, newspapers, gramophone records, originals and reproductions of paintings and sculpture, films and slides. A Cultural Center, in connection with the libraries, organizes discussion groups, debates, concerts, film showings, drama readings and courses in general education.

The Cafeteria Service, in operation in the Ivrea plants since 1936, has been progressively expanded to provide for the new production units that have been created in the last decade.



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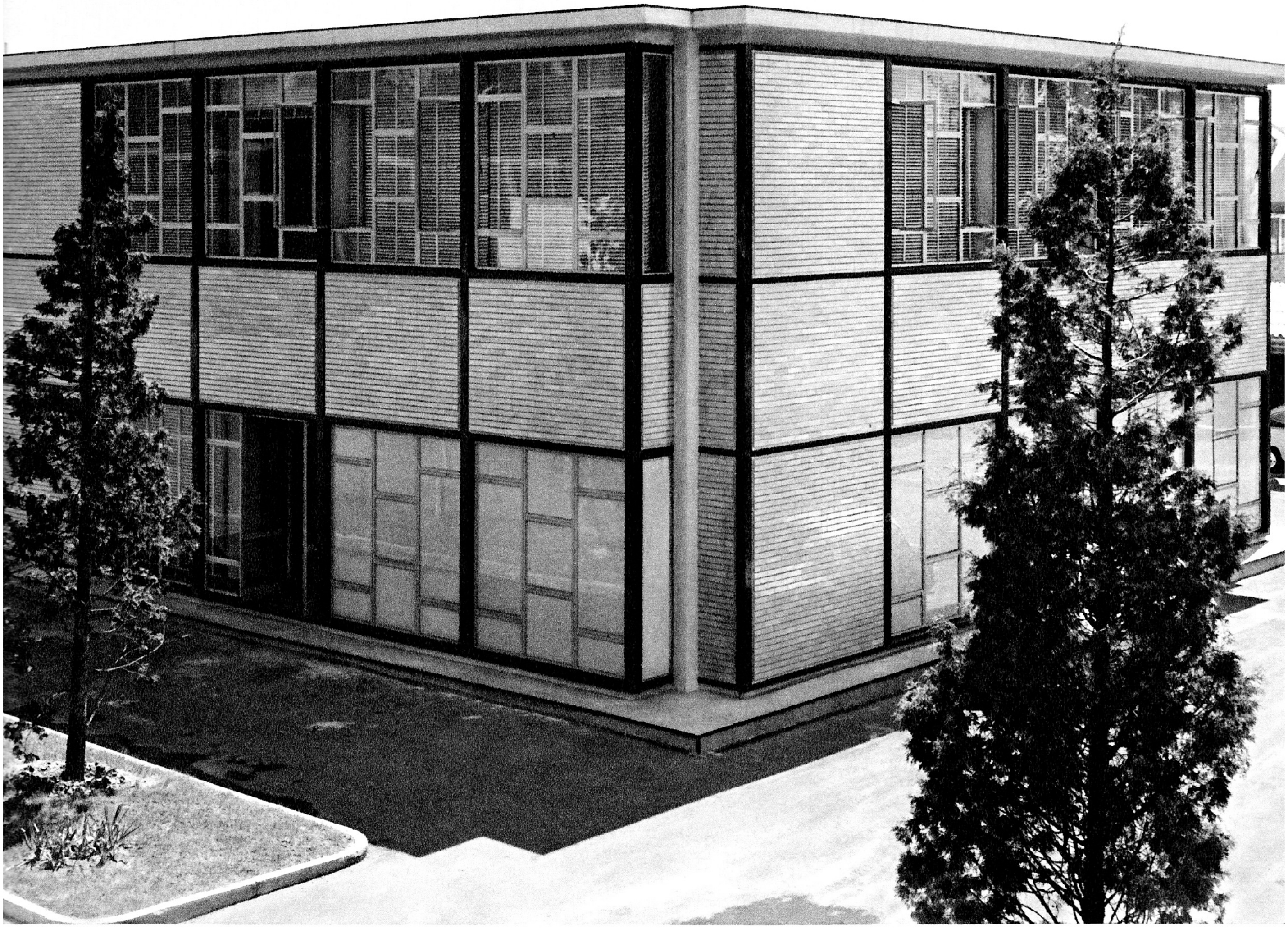
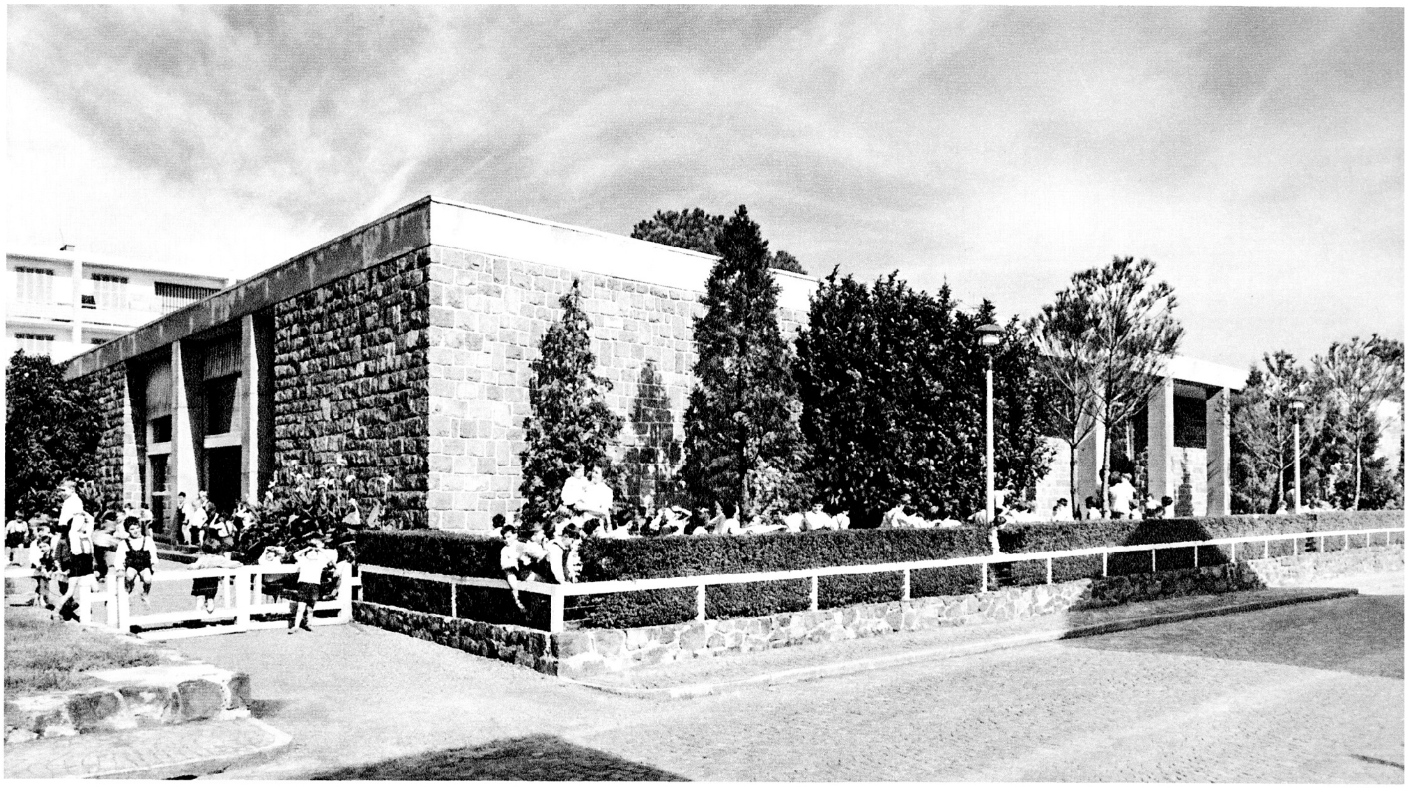


The Social Services building of the O.M.O. plant at San Bernardo. Among other facilities housed here, a medical service has a health and preventive medicine sub-section, which is in liaison with the factory offices responsible for the physical plant and for new constructions. As part of the company's program for prevention of work-connected sickness, the system aims to ensure hygienic working conditions.

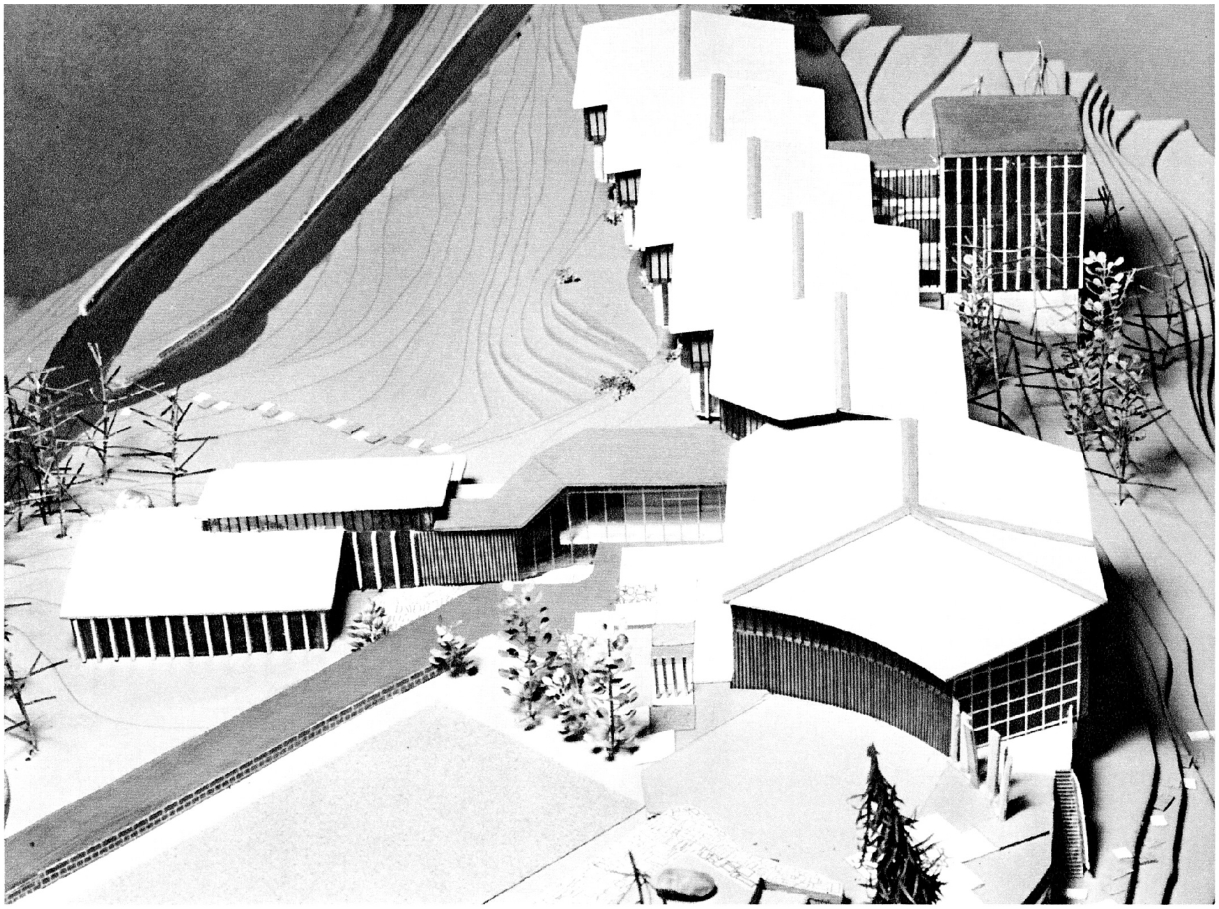


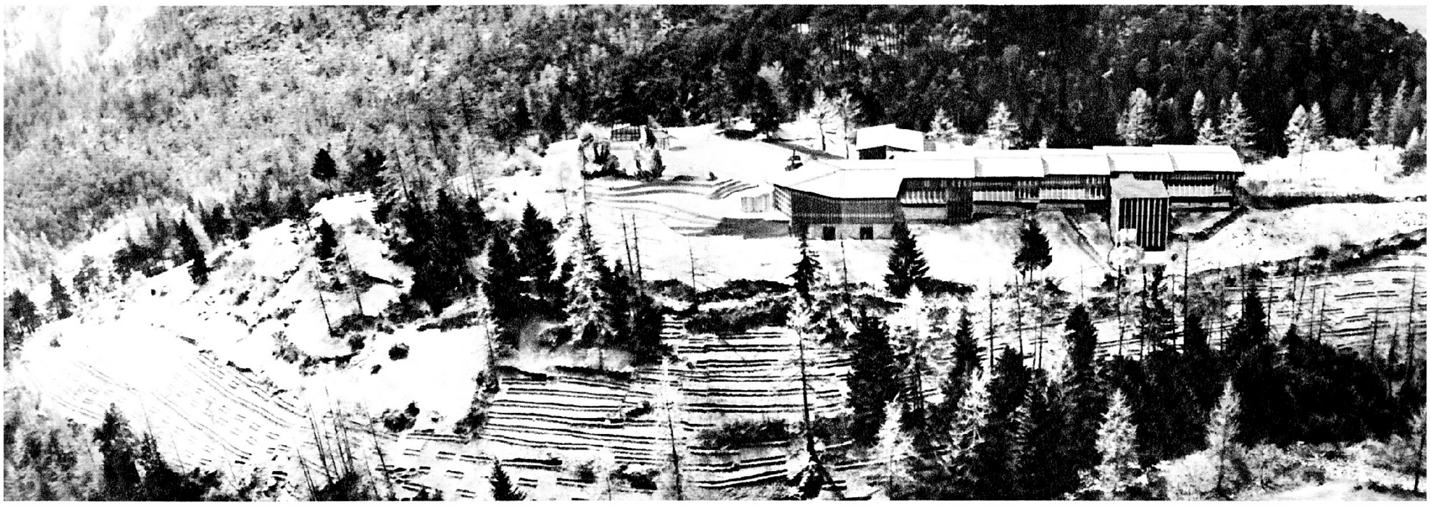
The kindergarten, designed by Figini and Pollini in 1940, where employees' children are looked after by trained personnel.

The pediatrics clinic, for employees' children up to the age of 14, gives them among other services the annual X-ray check-ups required before they are sent to seashore and mountain summer camps.

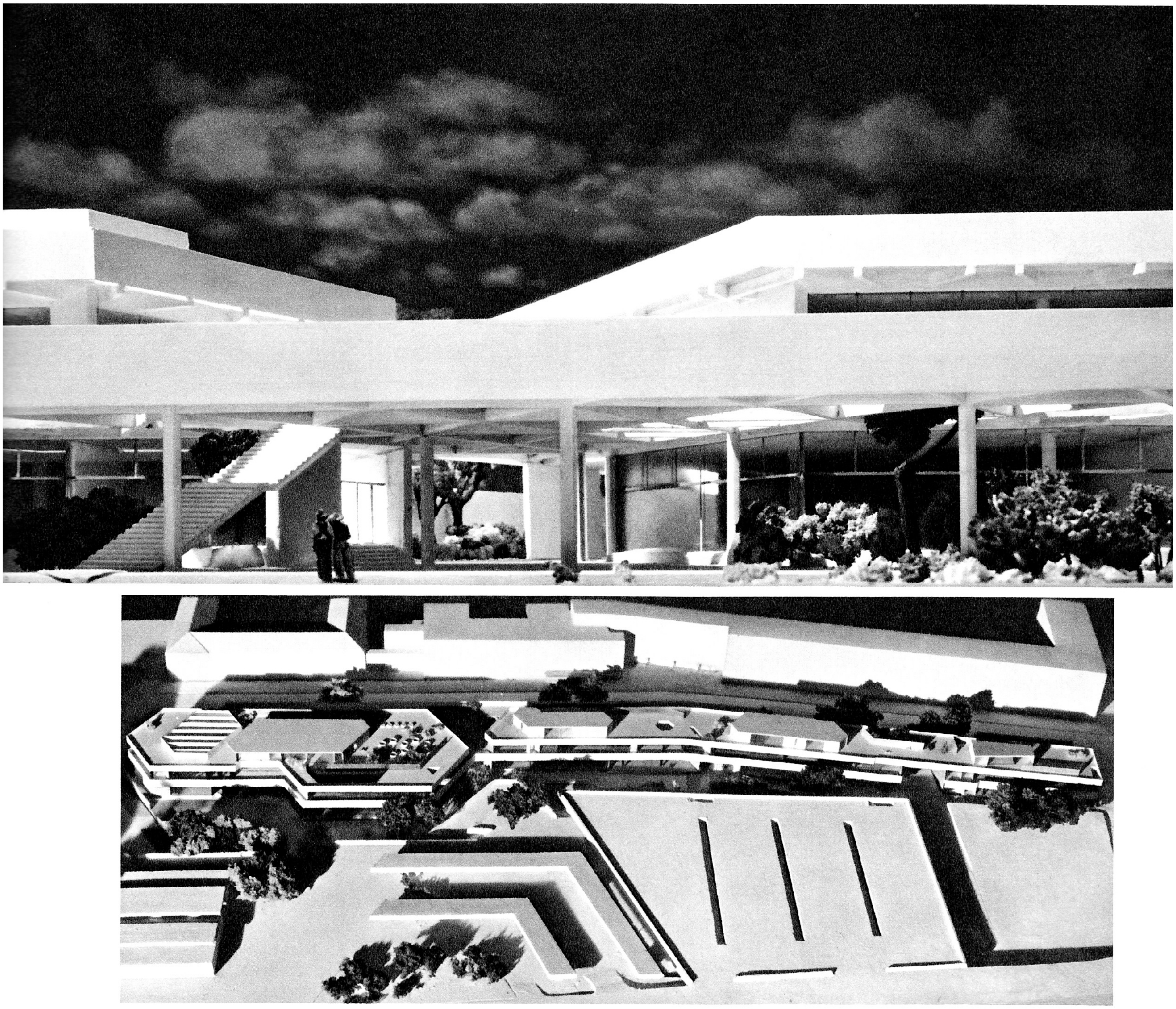
At the Day Center, children from three to six years old, divided into three classes, are encouraged to develop initiative and discipline through activities of their own choice.

The seaside summer camp at Marina di Massa (architects: Fiocchi and Cascio), for employees' children, is aimed at improving the campers' physical condition, and also at offering them experience in group living and activities. The camp staff is specially trained to further this aspect of camp life.

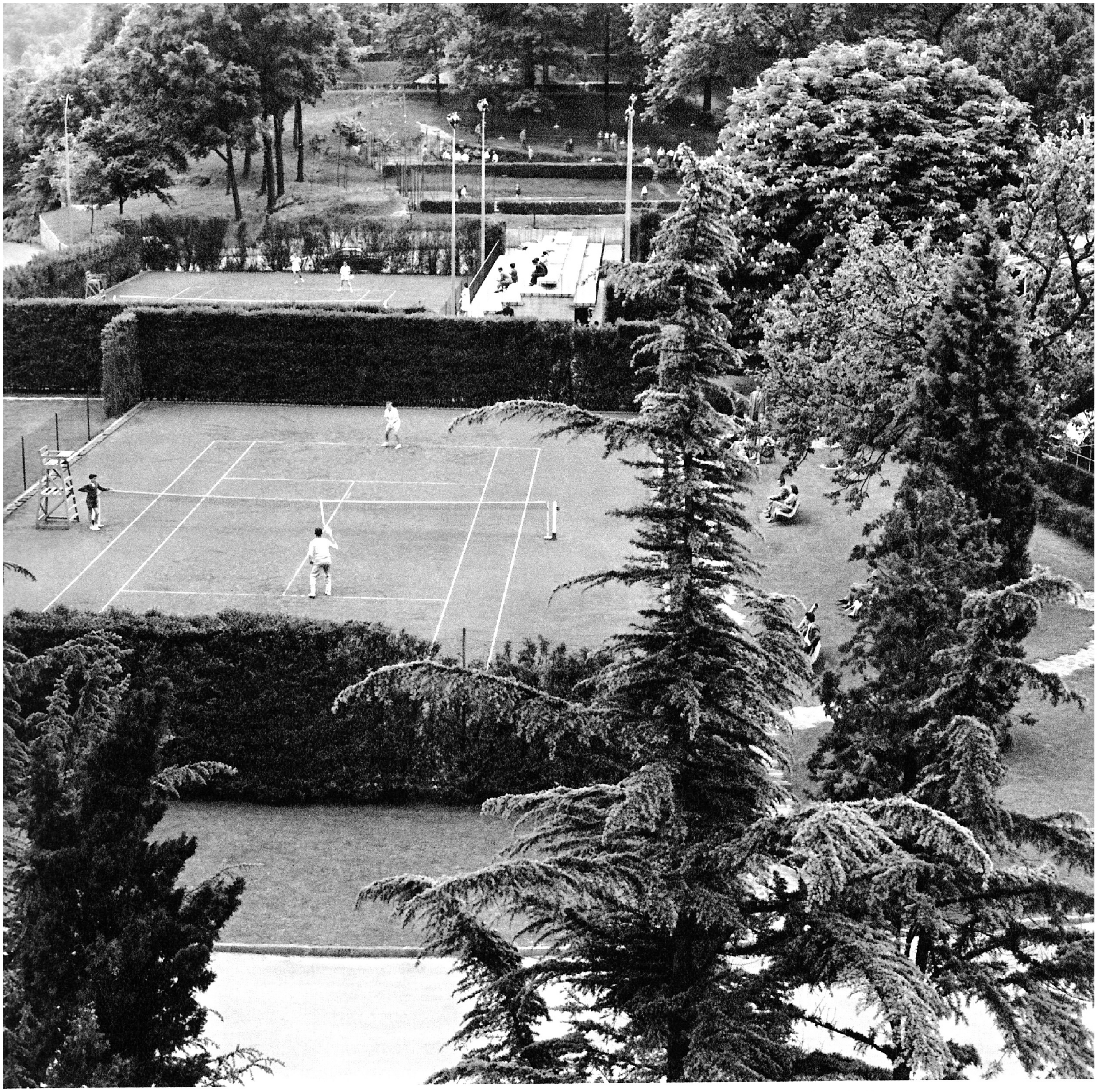




A new summer camp in the mountains at Brusson, Val d'Ayas, designed by Conte and Fiori. The camp buildings have two stories: below, the dining room; above, the dormitories. The camp will accommodate from 120 to 150 children.



The new Social Services complex, opposite the factory, has been completed in the company's fiftieth year.



Employees' leisure activities are organized, independently, in the various sections of the Sports and Recreation Group, which operates sports fields, recreation and reading rooms, and promotes sports events—often on the national or international level, theatrical performances, concerts, and trips in Italy or abroad.

The Sales Organization

The Sales Department, with main offices in Milan and in the factory at Ivrea, commands an organization covering Italy and extending to all parts of the world. Created when the factory was producing its first few hundred typewriters, the organization established its own network of direct branches — a commercial innovation at that time — which proved effective in marketing the Olivetti machines in the face of strong foreign competition. The aim was to make the relationship between production and sales as immediate as possible. As the common aim involved common responsibilities, the principle was established that the person who sells an Olivetti machine has the same objectives as those who produced it.

The development of production and of the sales organization necessarily followed the same impulse. With new models and an increasing variety of products, men trained to take initiative broadened the commercial activity and opened an ever wider market. New branches were opened progressively in Italy, and associated companies were established abroad. Independent distributors were appointed to supplement the activity of the branch offices, and special departments were created, such as the Portables Division, the Bookkeeping Machines Division and the Synthesis Division, to deal with the sales and service of specialized products. The expansion and diversification of the organization made it possible to weather national and international economic crises in half a century of history, and to compete for world markets. The thirty branches, two hundred exclusive distributors, and two hundred and thirty-five show rooms that comprise the commercial network in Italy, are the result, particularly in recent years, of an increasingly intensive program of organization and development. Today in Italy branch offices are in operation in Alessandria, Arezzo, Bari, Biella, Bologna, Brescia, Cagliari, Catania, Catanzaro, Cosenza, Florence, Genoa, Leghorn, Messina, Milan, Naples, Novara, Padua, Palermo, Perugia, Ravenna, Rome, Syracuse, Sassari, Turin, Trieste, Varese, Venice, Verona and Vicenza.

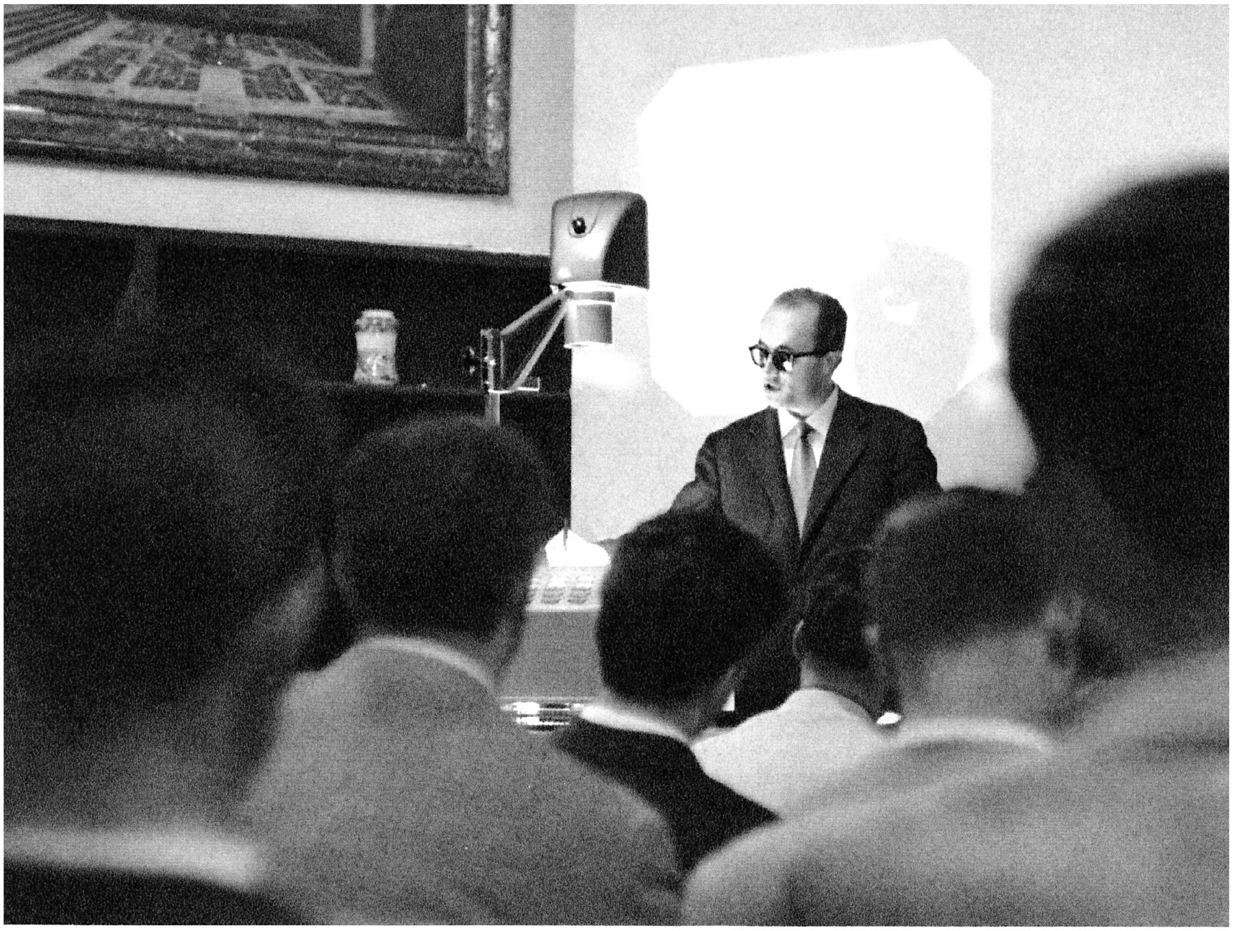
Personnel for the branches, selected nationally by a special office, is sent for training to the company's Sales Personnel Training Center, in Florence. An important division of the Sales Department is the Customers Technical Assistance Service, which has been steadily developed since its establishment. All mechanics assigned to the branches and distributors for the company's regular maintenance service, are specially trained by this organization in Ivrea. This procedure ensures uniform methods and a high standard of technical proficiency throughout the country. Outside Italy, the associated companies, in the course of their development, have created their own sales organization, either patterned on the Italian system or based, where more suitable, on local conditions. In either case, a certain uniformity, especially regarding the system of production and the organizational framework, binds Olivetti of Italy to its associated companies, so that Olivetti products reach the market through a system that is substantially the same throughout the world.

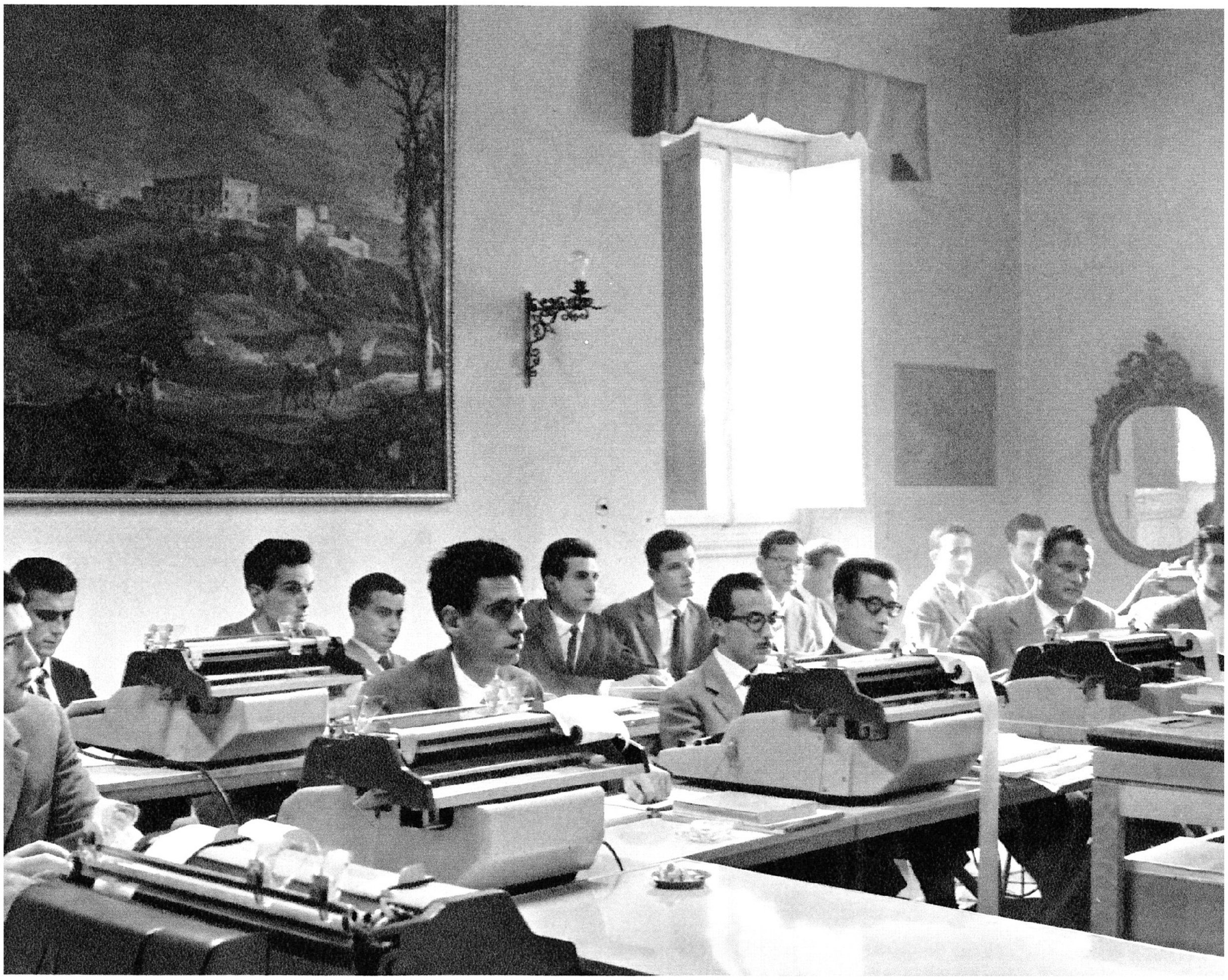
For their national markets, Hispano Olivetti in Barcelona (founded 1929), Olivetti Argentina S.A. in Buenos Aires (1932), British Olivetti Ltd. in Glasgow (1947), Olivetti Africa (Pty) Ltd. in Johannesburg (1949) and Olivetti Industrial in Sao Paulo, Brazil (1957) all produce or assemble the same models as the Italian plants, utilizing the same methods and materials. The allied companies that do not manufacture, but import and sell the company's products are: S.A. Belge Olivetti in Brussels (1930), S. A. M. P. O. Olivetti in Paris (1939), Austro-Olivetti Büromaschinen A.G. in Vienna (1949), Olivetti Mexicana S.A. in Mexico City (1949), Olivetti Corporation of America in New York (1950), Olivetti Australia (Pty) Ltd. in Sydney (1952), Olivetti Colombiana S.A. in Bogota (1953), Deutsche Olivetti Büromaschinen A.G. in Frankfurt (1953), Olivetti Canada Ltd. in Toronto (1955), Olivetti de Venezuela C.A. in Caracas (1956), Olivetti de Centro America S.A. in Havana (1957) and Olivetti A.S. in Copenhagen (1958).

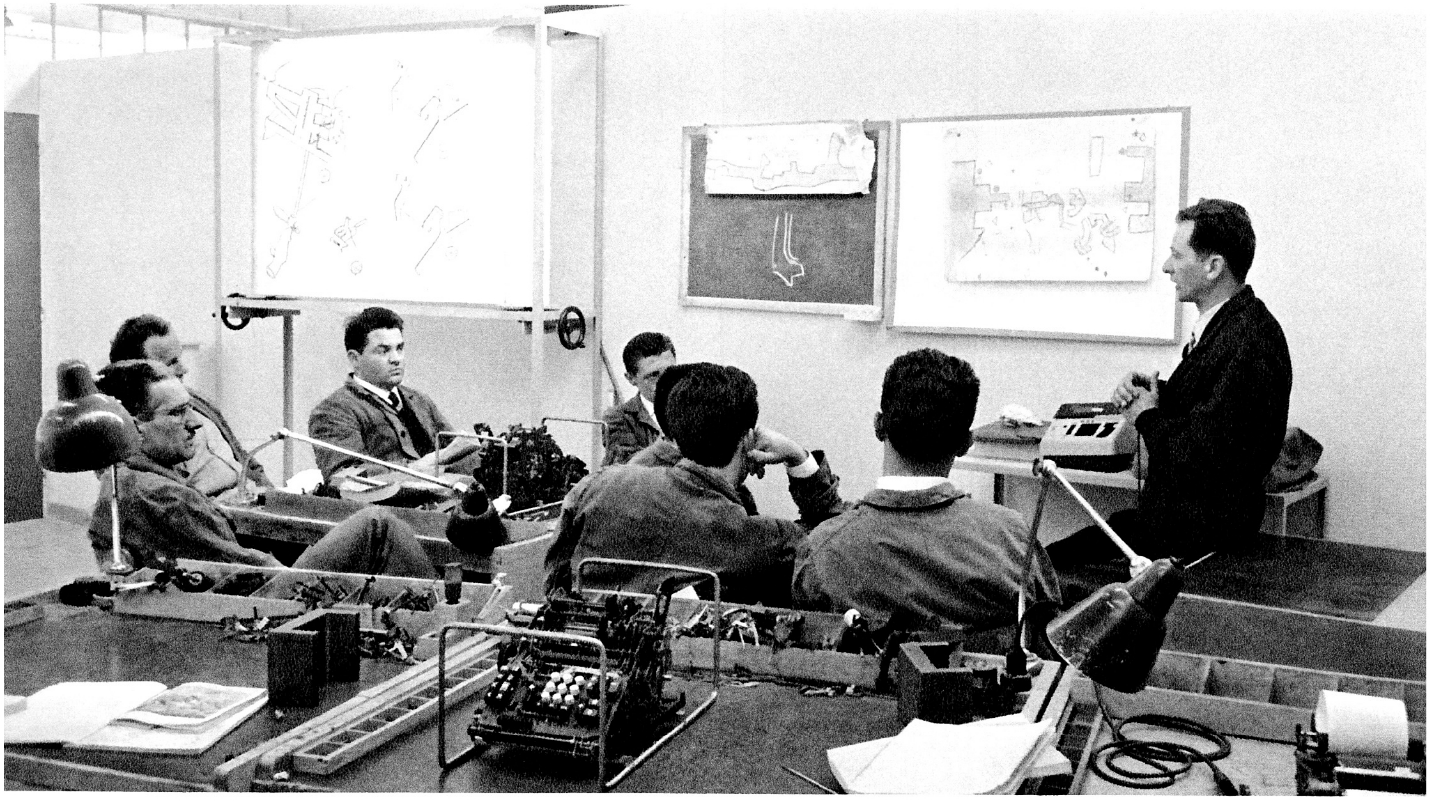
In addition to these seventeen allied companies, the organization includes agents, representatives and independent distributors in most countries, so that Olivetti products and maintenance service are available in every important city of the world.

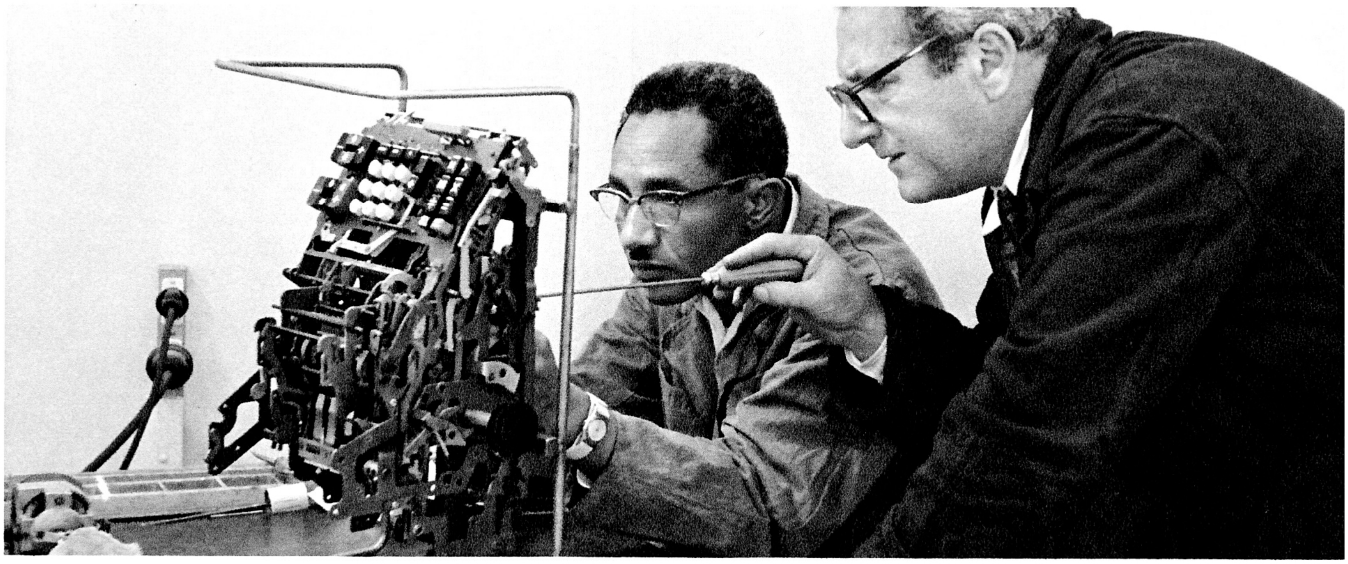
A measure of the company's success in its competition with the most advanced office-machine industries in highly industrialized countries, is that at present nearly two-thirds of its total production is exported.

Training courses for sales personnel are held in Florence, in historic Villa Natalia on the Via Bolognese. The courses offer technical instruction in the operation of the office machines, as well as lectures on sales psychology.

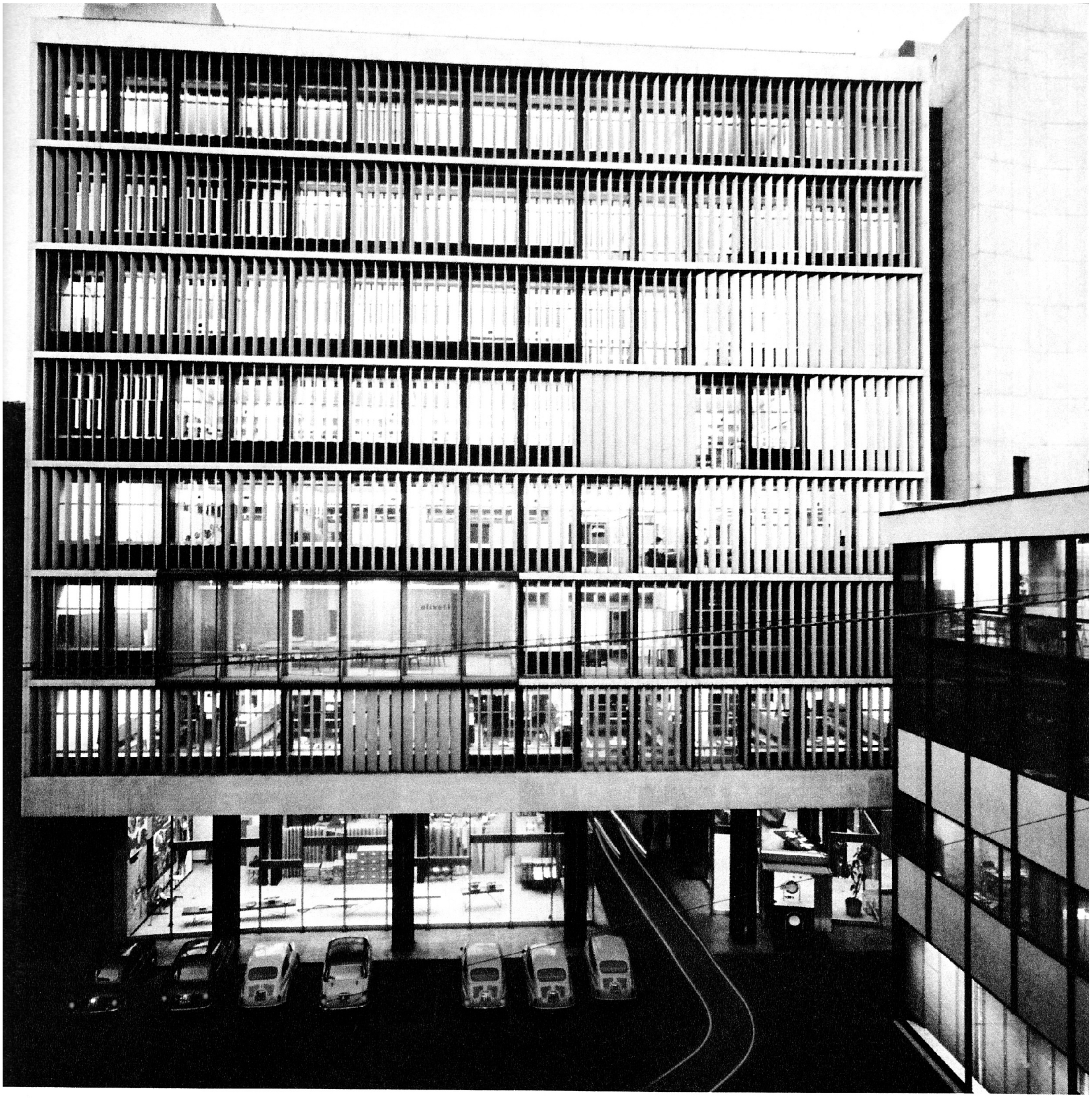




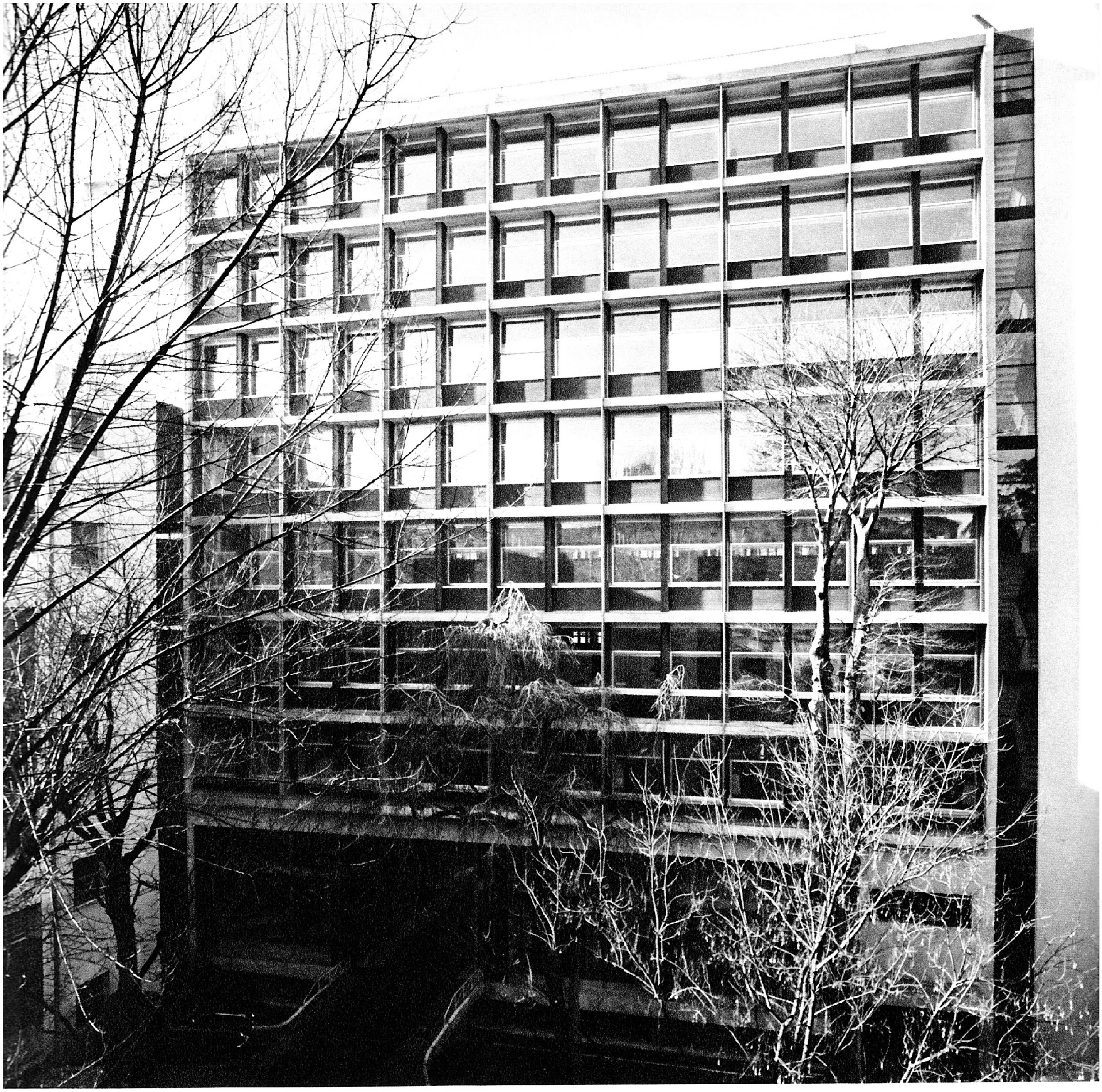




Maintenance and service personnel attend courses given by the Customers Technical Assistance Service in Ivrea.

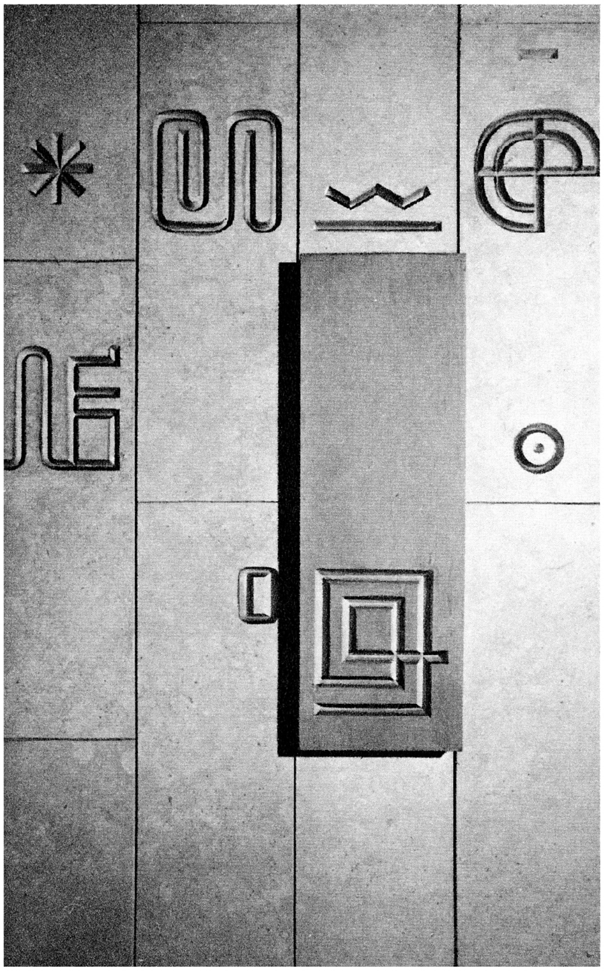


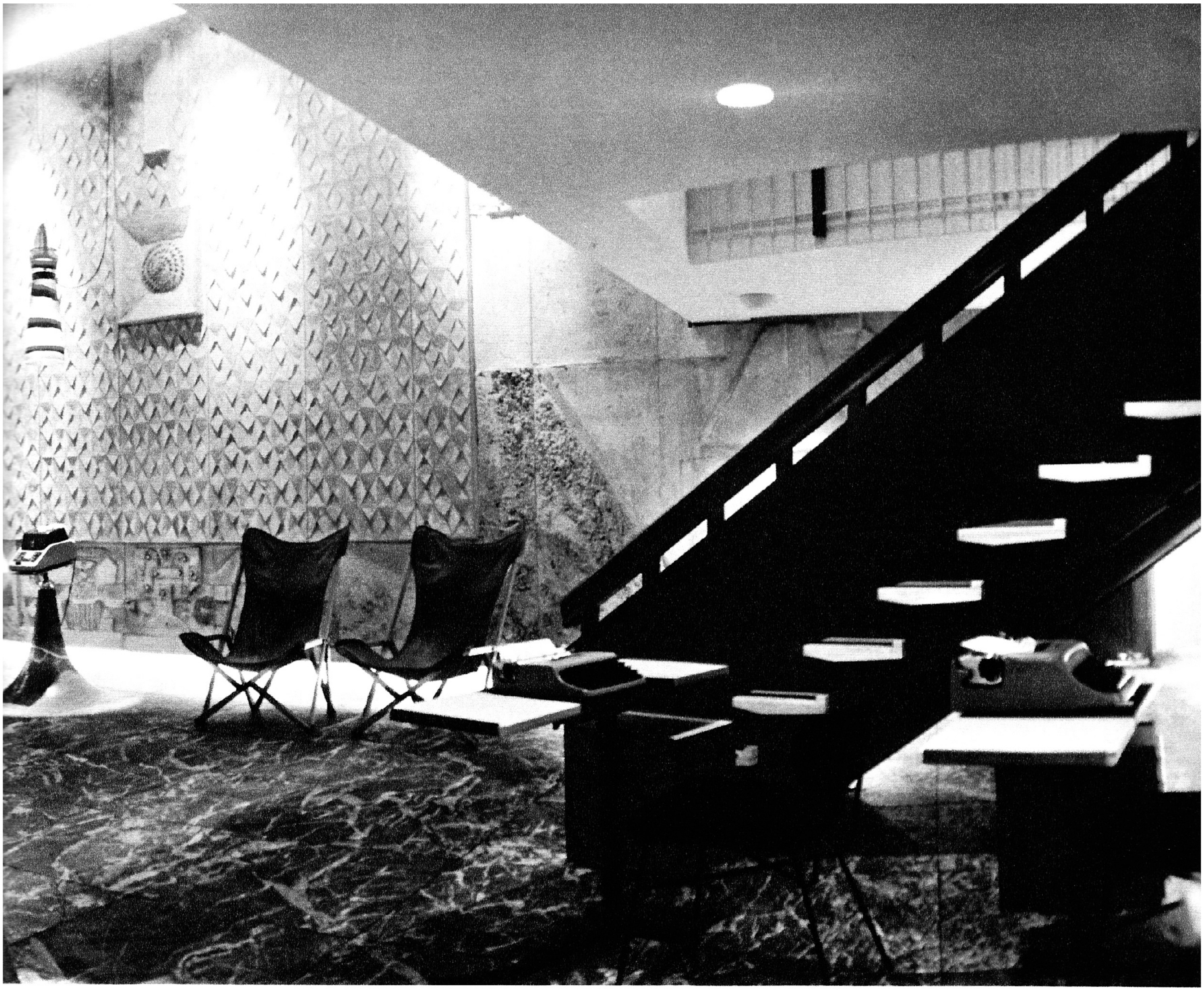
The Sales Department has its main offices in Milan, in a new building erected by the architects Bernasconi, Fiocchi and Nizzoli, on the site of a house destroyed during the war. The problem of incorporating a new structure in an old section of the city, opposite the 18th-century Palazzo Clerici, was resolved by setting back the façade from the line of the existing buildings.
The seven-storied building has a display hall on the ground floor.

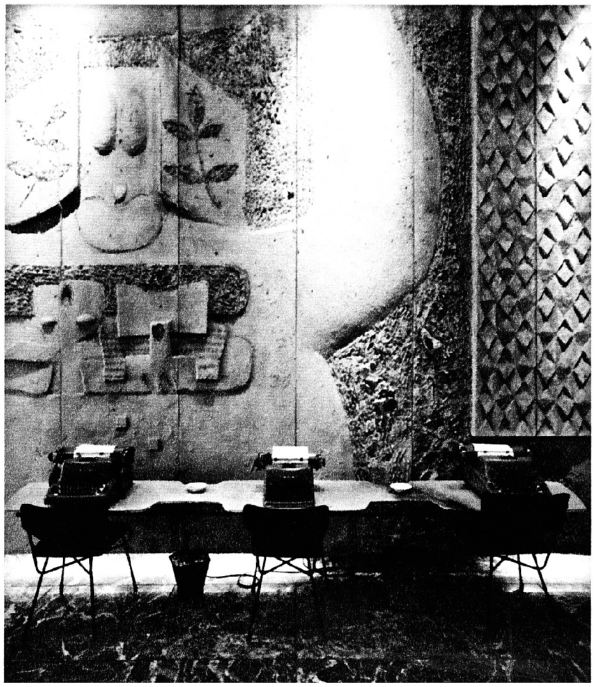


The north façade of the Olivetti Building in Milan.

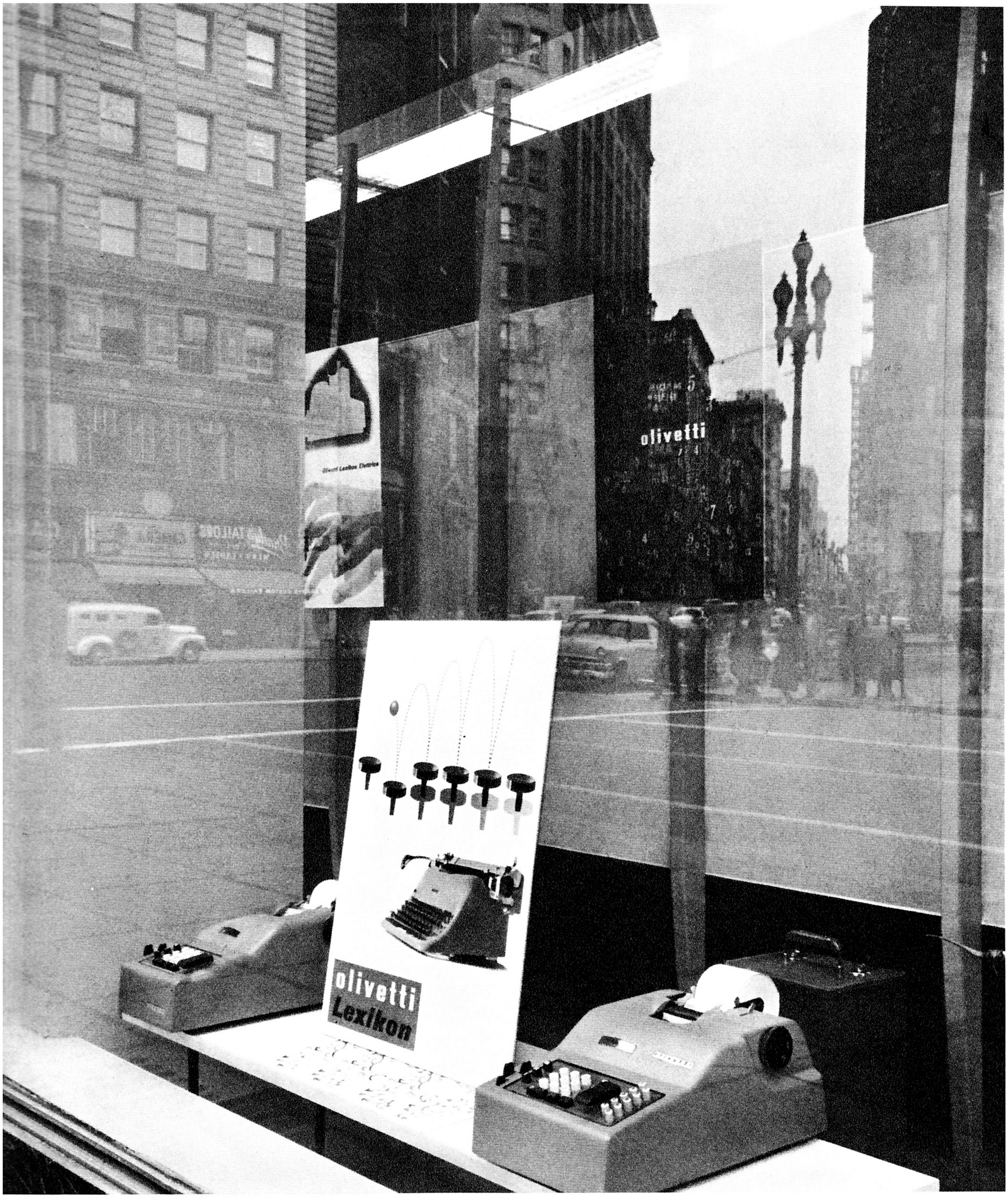
Opposite: details of entrance and façade.







The New York show room, which has become a landmark on Fifth Avenue, was designed by Belgiojoso, Peressutti and Rogers. Outside, a typewriter on a marble pedestal, for the use of passersby. Inside, Costantino Nivola's 23-meter sand mural enlivens an entire wall.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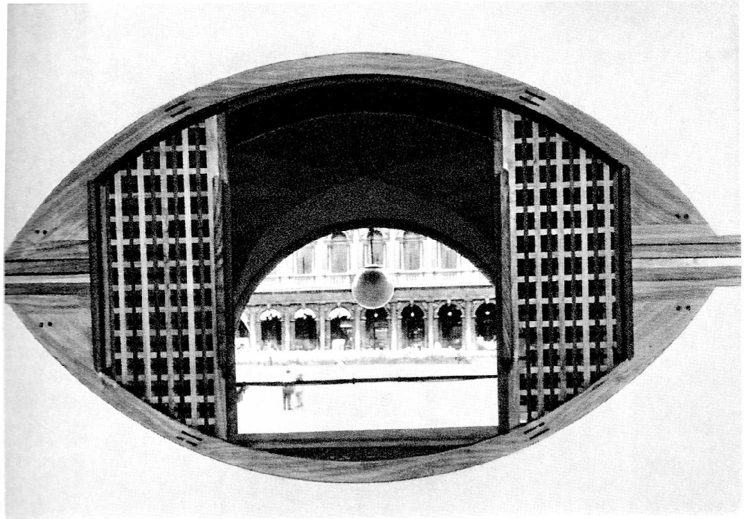
San Francisco's daily life and movement are reflected in the window of the show room designed by the architect Cavaglieri and the painter Lionni.

Right. Fresco by Renato Guttuso in the Rome store.



Detail of the Venice show room in Piazza San Marco. Architect: Carlo Scarpa.

Right. The first Olivetti store has been operating for more than forty years in the Gallery of Milan, at the heart of Italy's commercial life.

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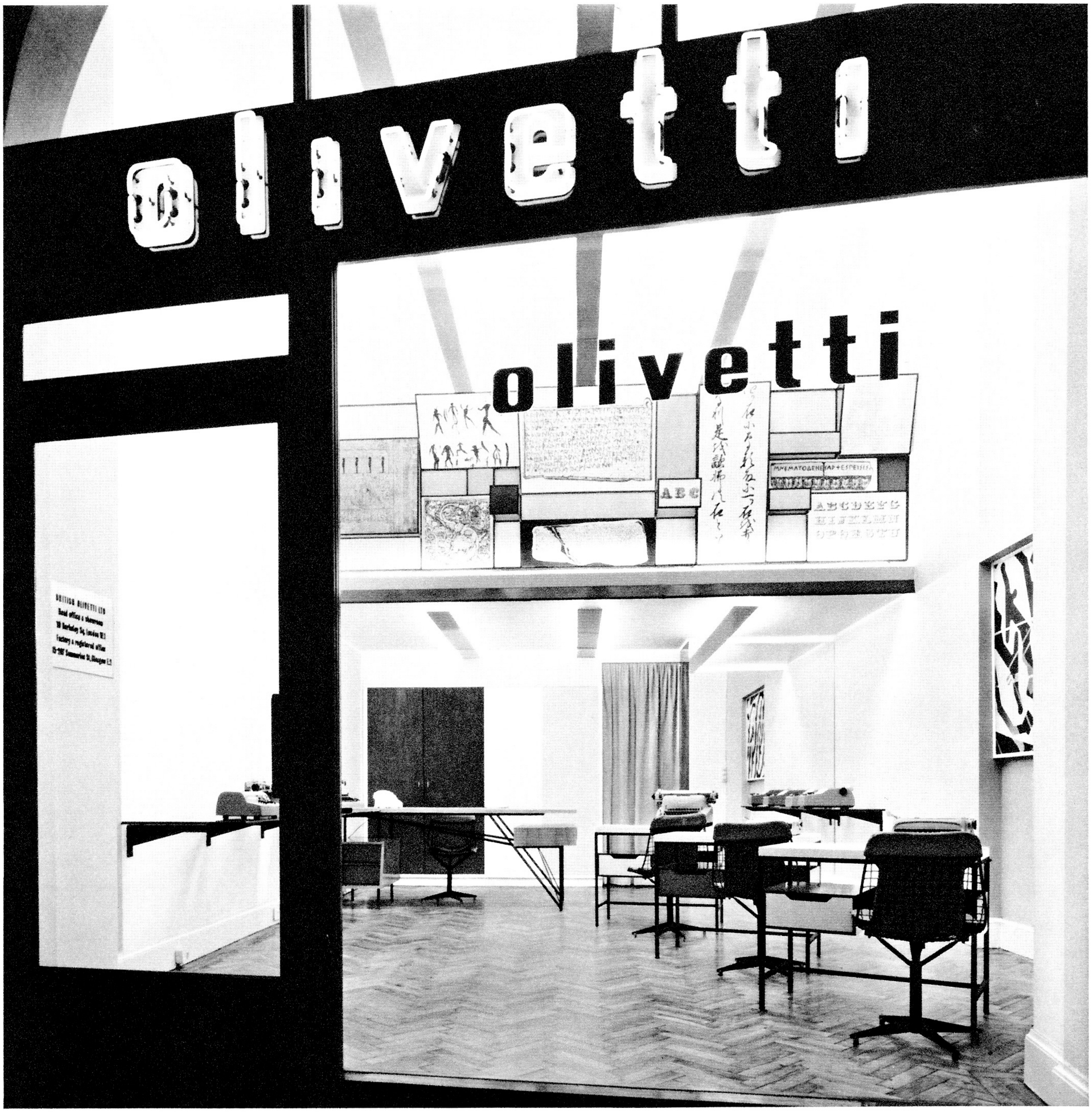
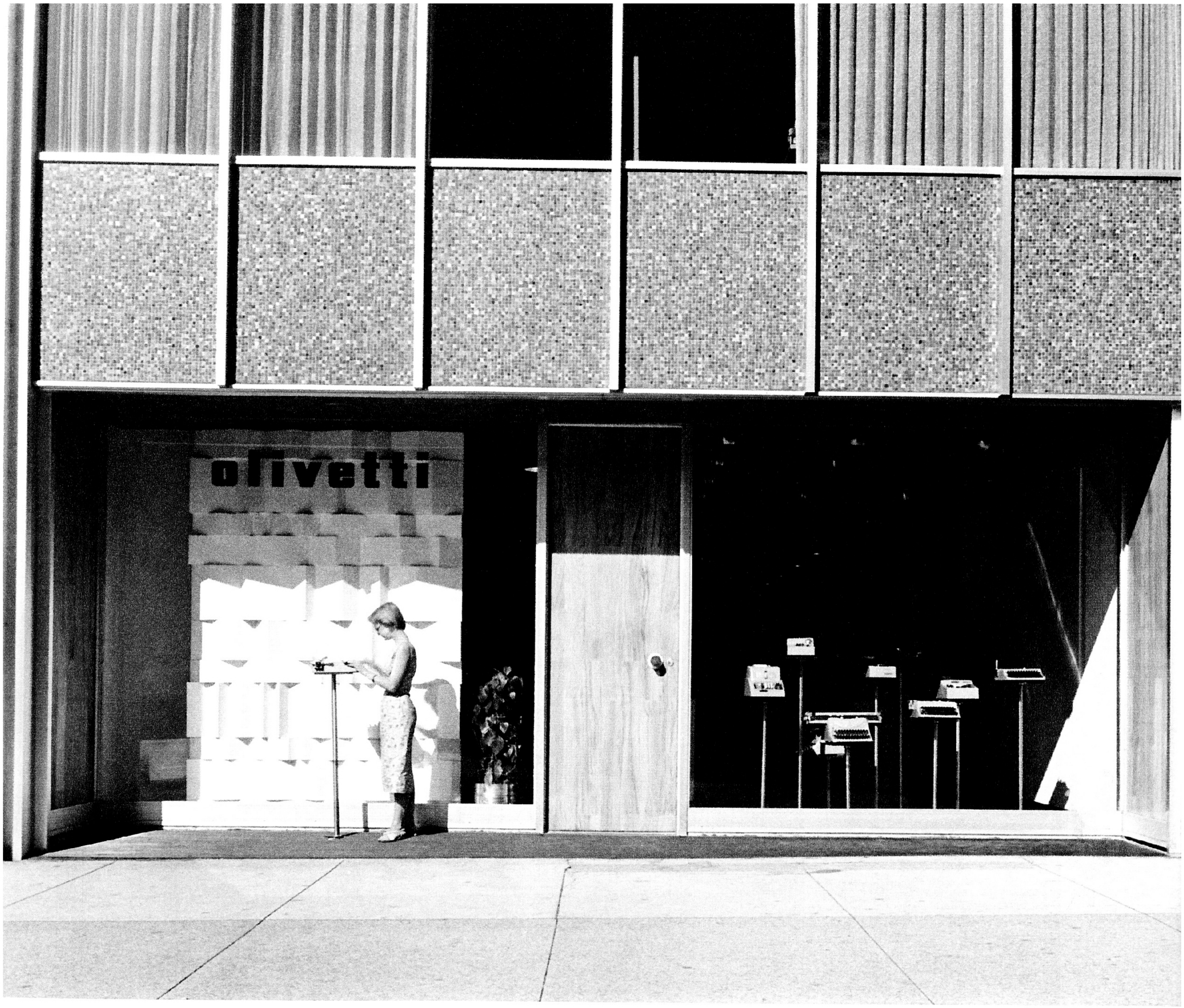


London, the display room in Kingsway, designed by E. Bonfante.

Left, above. In Caracas, Venezuela, the show room designed by E. Bonfante.

Left, below. Olivetti Industrial S.A.'s offices in Sao Paulo, Brazil, by G. Palanti and B. Buffoni.



The Chicago store, designed by L. Lionni.

Industrial Design and Advertising

The expression, *Olivetti style,* which is now commonly used in magazines and conversation to describe a specific taste and trend, evidently refers to something more than transitory fashion or gifted improvisation. It means that the collaboration and joint effort of the management of an industry and a group of painters and graphic artists, writers and journalists, architects and industrial designers has become a cultural reality. The Olivetti company gives and has always given as much relative importance to the choice of a color for the cover of a publication, an adjective for a slogan, the design for a display or a machine, as to the choice of some technical procedure, a type of steel or a method of casting.

After its earliest expressions, which conformed to the prevailing taste of the period and aimed at emphasizing the national character of the new industry, Olivetti style was directed toward immediate, rational communication, with firm faith in the efficacy of simplicity.

"A typewriter", runs a comment by Camillo Olivetti written in 1912, "should not be a geegaw for the drawing room, ornate and in questionable taste. It should have an appearance that is serious and elegant at the same time". The company's advertising has followed these criteria.

During the second phase of the industry's development, when the President's office began to take an active part in directing and promoting Olivetti publicity, until the end of the second World War, the company's advertising copy was mainly concerned with describing the clarity and modernity of typewriting as opposed to handwriting.

"The time has come to turn inkwells into flower vases," was one of the slogans of the period. This approach produced a style connected with the most advanced contemporary art, full of allusions to science and architecture, the art of typography and interior decoration. Suggestions from cubism, surrealism and, later, abstract art were combined with the more severe theme of industrial efficiency. At the first Triennial Exhibitions in Milan, the general opinion was that Olivetti's publicity, created by Renato Zveteremich, Leonardo Sinisgalli and Giovanni Pintori among others, exemplified contemporary cultural awareness in industry.

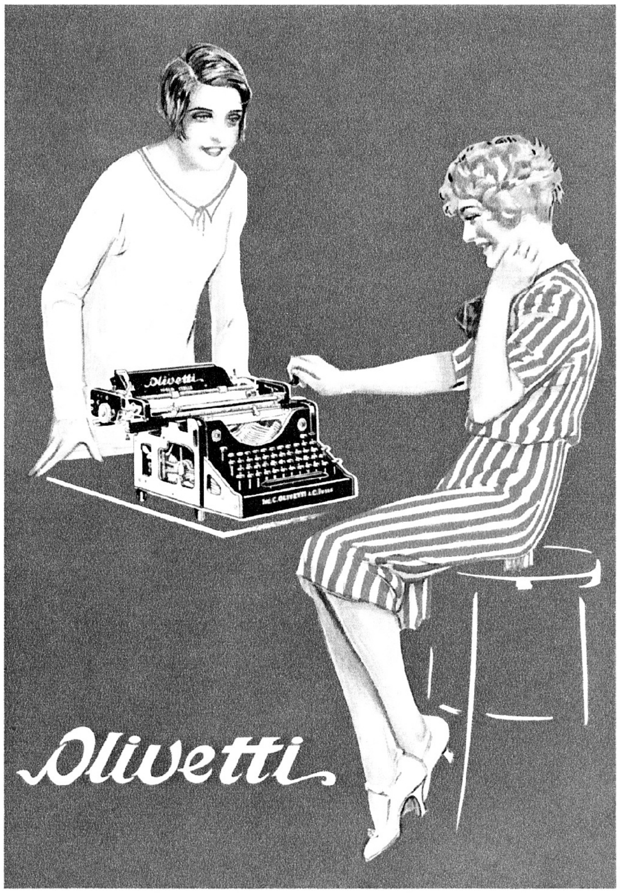
After the war, the company succeeded in maintaining the same coherency of taste, despite the increase in the number of products, the greater diversity in markets, and world-wide extension of the advertising campaigns. A broader public was attracted by the use of new media and devices, which ranged from billboards and roadside constructions to the production of documentary films and the publication of art reproductions and cultural reviews. At the same time, Olivetti's industrial design was winning increasing recognition from authorities in the field. An early high point was Marcello Nizzoli's design for the body of the "Lexikon 80," which appeared in 1948, and is now generally considered to be one of the most important examples of the Olivetti style.

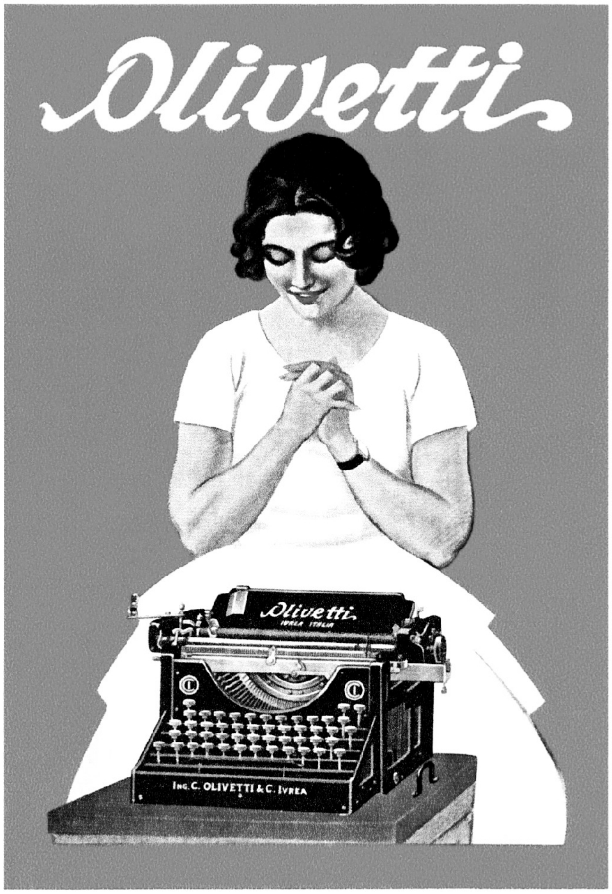
Most of the publications concerned with this field have run articles and essays on Olivetti graphic work and design. In 1952, the Museum of Modern Art of New York invited the Olivetti company to exhibit its work in advertising, industrial design and architecture. It was the first such invitation to industry. Since then, the company has shown at many exhibitions and congresses in Italy and abroad, including the International Graphic Art Exhibition in Berlin (1954); the Louvre show (1955) where Giovanni Pintori's graphic work was exhibited, and the show held at the Institute of Contemporary Art in London (1957). In Italy, the annual *Palma d'Oro* award in advertising was given to the Olivetti company in 1950, the year the award was established.

Under the direct supervision of the President's office, the Press and Publicity Department prepares the company's advertising campaigns, which are carried out by the specialists of the publicity techniques office. From time to time the publicity office calls in internationally known artists, among whom have been Schawinsky, Bayer, Lionni, Rand, Reiner, Cassandre and Savignac.

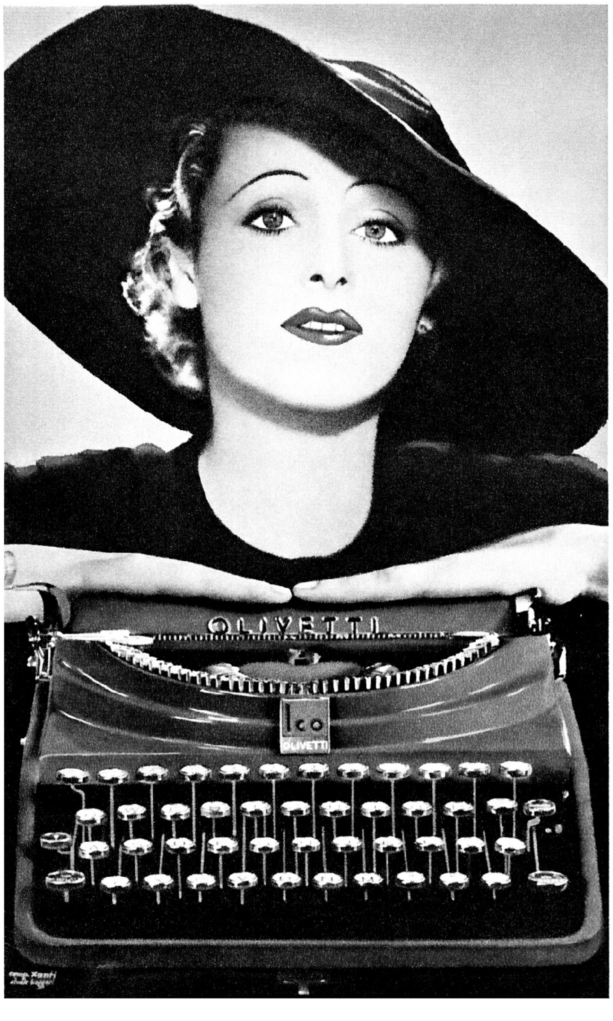
The name of a new product, the layout of a sales letter, the plan for a pavilion at an industrial fair, the color scheme for a magazine, the text of a folder, the selection of details from a fresco for next year's art calendar—every aspect, in short, of Olivetti's advertising is considered in relation to the concept that advertising is a public service, and that the choice of esthetic and stylistic qualities is a public responsibility. If the color of a poster or the shape of a machine are intended as an invitation to the prospective user, these colors and shapes should appeal to his rational ability to make an intelligent choice.

This concept of responsibility underlies the numerous cultural and civic activities undertaken by the Olivetti company. Examples include the bi-monthly art review and digest, *Sele Arte,* edited by C. L. Ragghianti, and many other instances of community service, such as support for technical and social programs and for architecture and town planning.

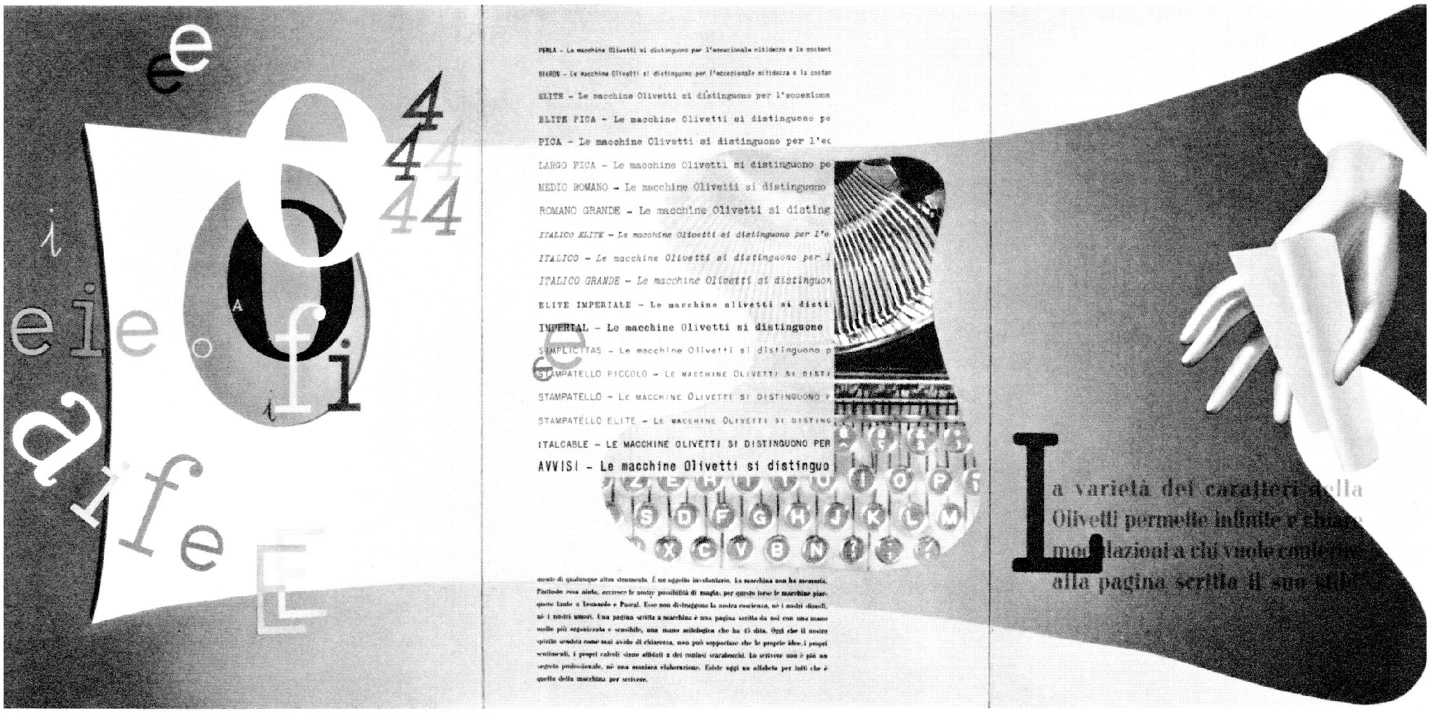



Olivetti
Olivetti
Ing. C. OLIVETTI & C. IVREA

Two of the earliest examples of Italian typewriter advertising, by M. Dudovich.


OLIVETTI
Ico
OLIVETTI

Right. A composition by X. Schawinsky (1935) for the first portable model.


PERLA - Le macchine Olivetti si distinguono per l'eccezionale nitidezza e la costant

[illegible] - Le macchine Olivetti si distinguono per l'eccezionale nitidezza e la costan

ELITE - Le macchine Olivetti si distinguono per l'ecceziona

ELITE PICA - Le macchine Olivetti si distinguono pe

PICA - Le macchine Olivetti si distinguono per l'ec

LARGO PICA - Le macchine Olivetti si distinguono pe

MEDIO ROMANO - Le macchine Olivetti si distinguono

ROMANO GRANDE - Le macchine Olivetti si disting

ITALICO ELITE - Le macchine Olivetti si distinguono per l'e

ITALICO - Le macchine Olivetti si distinguono per l

ITALICO GRANDE - Le macchine Olivetti si distinguon

ELITE IMPERIALE - Le macchine olivetti si disti

IMPERIAL - Le macchine Olivetti si distinguono

SIMPLICITAS - Le macchine Olivetti si distinguono p

STAMPATELLO PICCOLO - LE MACCHINE OLIVETTI SI DISTI

STAMPATELLO - LE MACCHINE OLIVETTI SI DISTINGUONO P

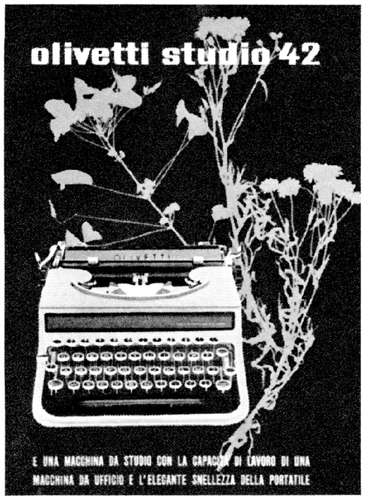
STAMPATELLO ELITE - LE MACCHINE OLIVETTI SI DISTING

ITALCABLE - LE MACCHINE OLIVETTI SI DISTINGUONO PER

AVVISI - Le macchine Olivetti si distinguo

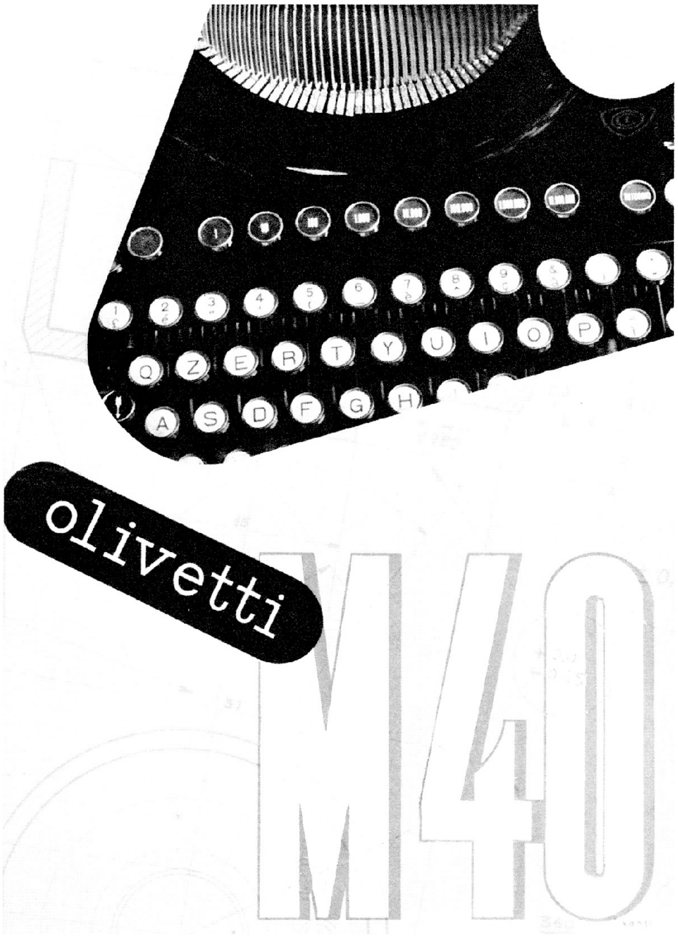
La varietà dei caratteri della Olivetti permette infinite e chiare modulazioni a chi vuole conferire alla pagina scritta il suo stile?

C. Nivola (1937)

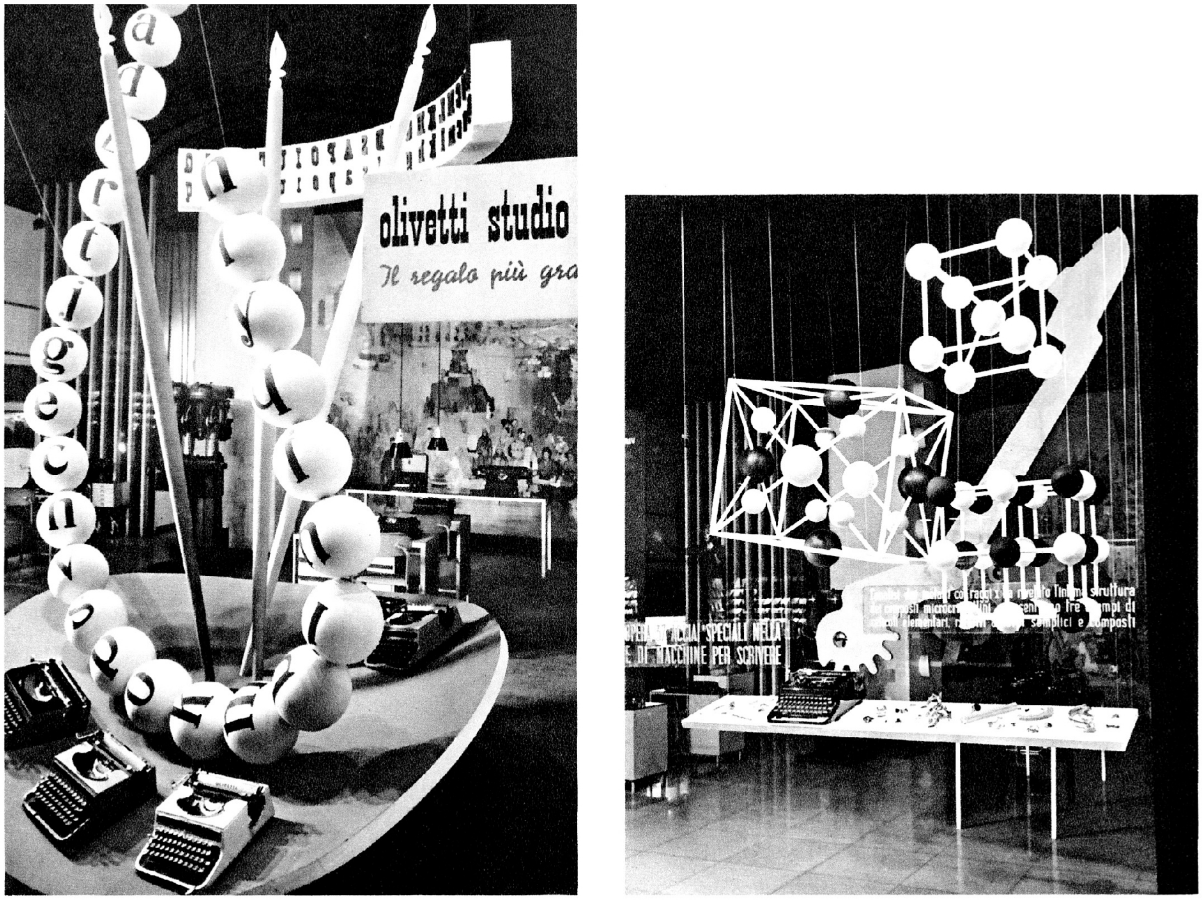


È UNA MACCHINA DA STUDIO CON LA CAPACITÀ DI LAVORO DI UNA MACCHINA DA UFFICIO E L'ELEGANTE SNELLEZZA DELLA PORTATILE

G. Pintori (1938)

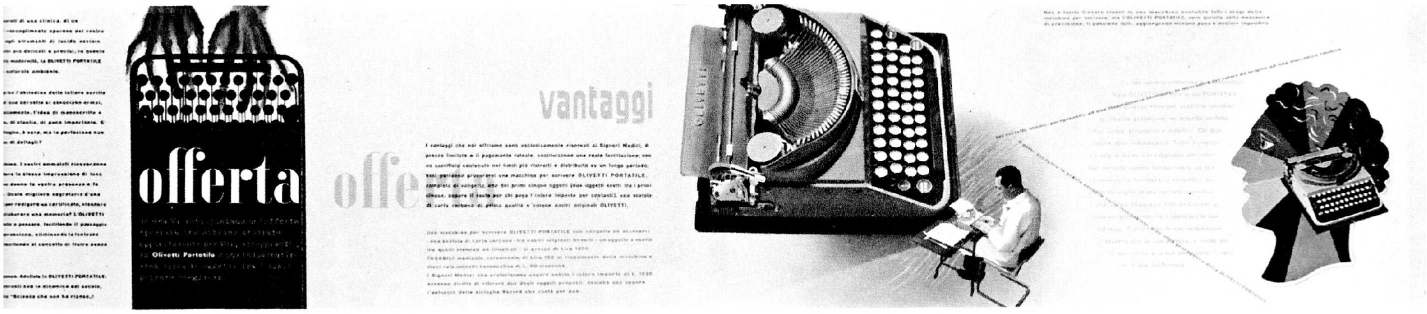


X. Schawinsky (1934)

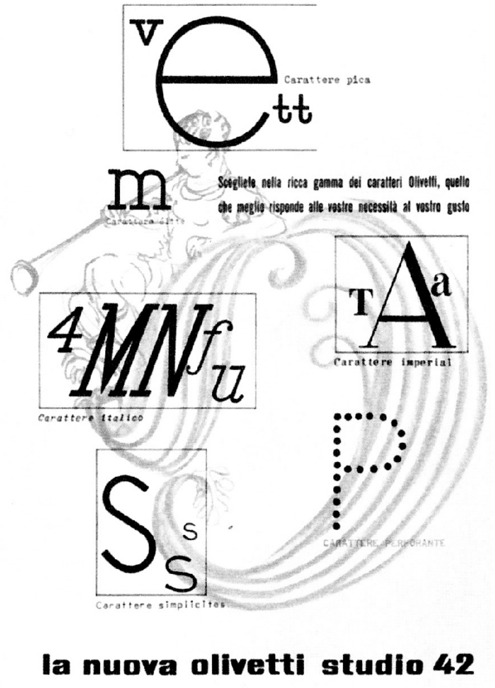

olivetti studio
Il regalo più gra
ACCIAI SPECIALI NELLA
DI MACCHINE PER SCRIVERE

Two window displays in the Milan Gallery store (L. Sinisgalli and G. Pintori, 1939).

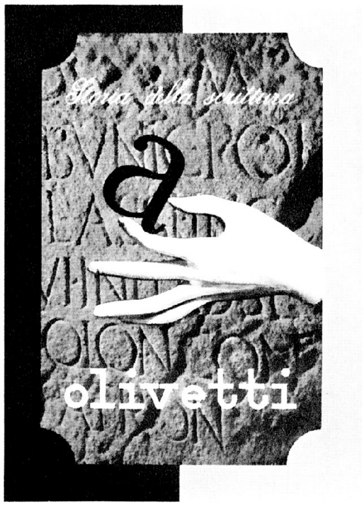
Below. A folder advertising the portable, designed for distribution to doctors (X. Schawinsky, 1934).


offerta
offe
vantaggi
OLIVETTI

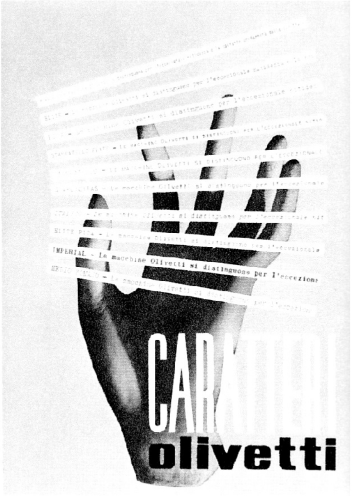
G. Pintori (1939)

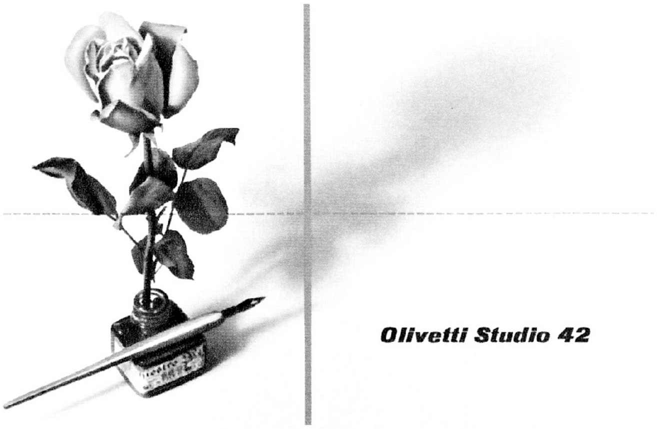

v e tt
Carattere pica
m
Carattere élite
Scegliete nella ricca gamma dei caratteri Olivetti, quello che meglio risponde alle vostre necessità al vostro gusto
T A a
Carattere imperial
4 MN f u
Carattere italico
S s s
Carattere simplicites
P
CARATTERE PERFORANTE
la nuova olivetti studio 42

C. Nivola (1937)


Storia della scrittura
a
olivetti

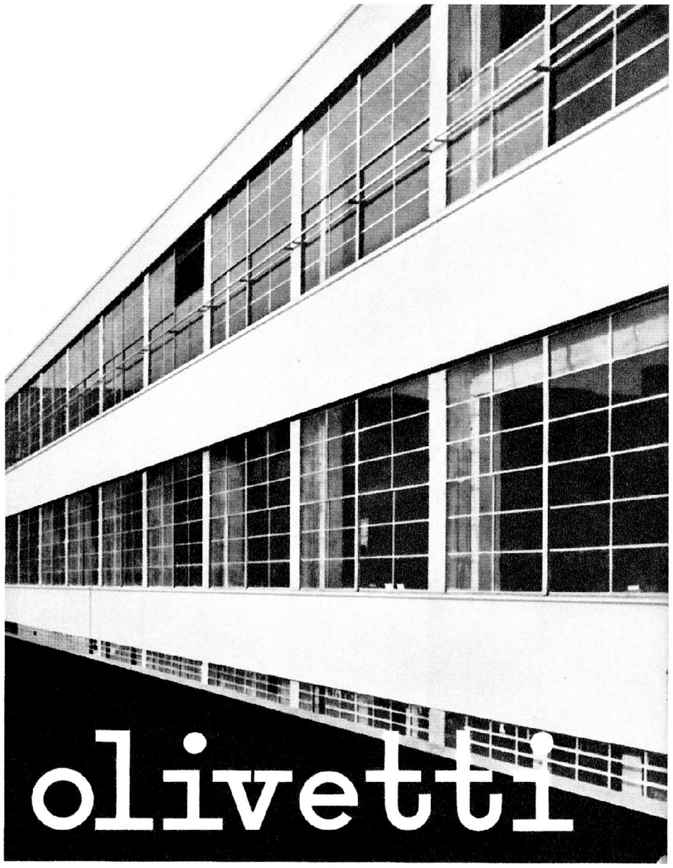
L. Sinisgalli and G. Pintori (1938)

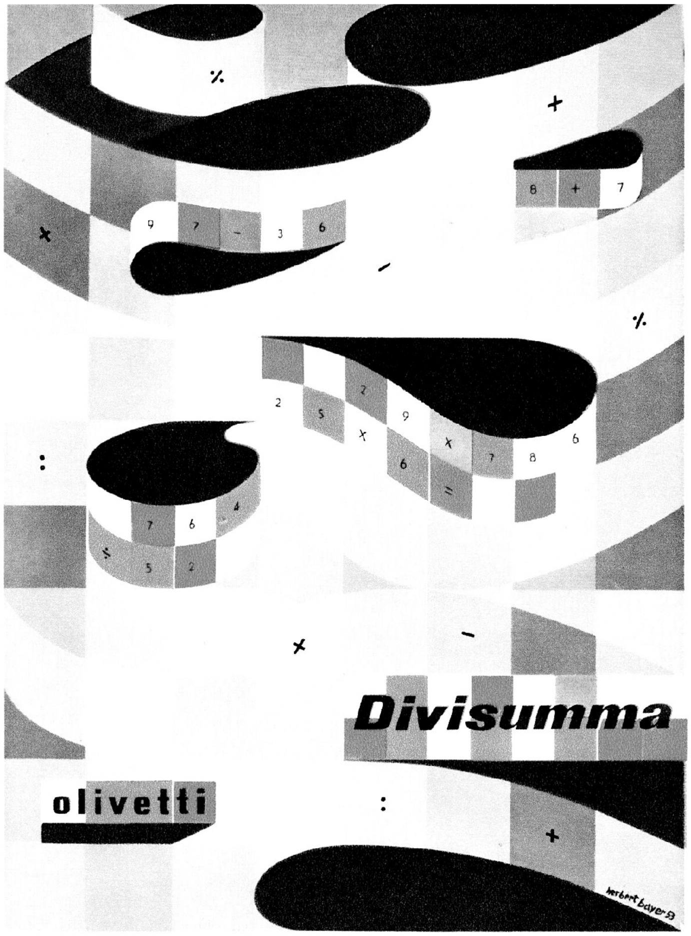

CARATTERI
olivetti


Olivetti Studio 42

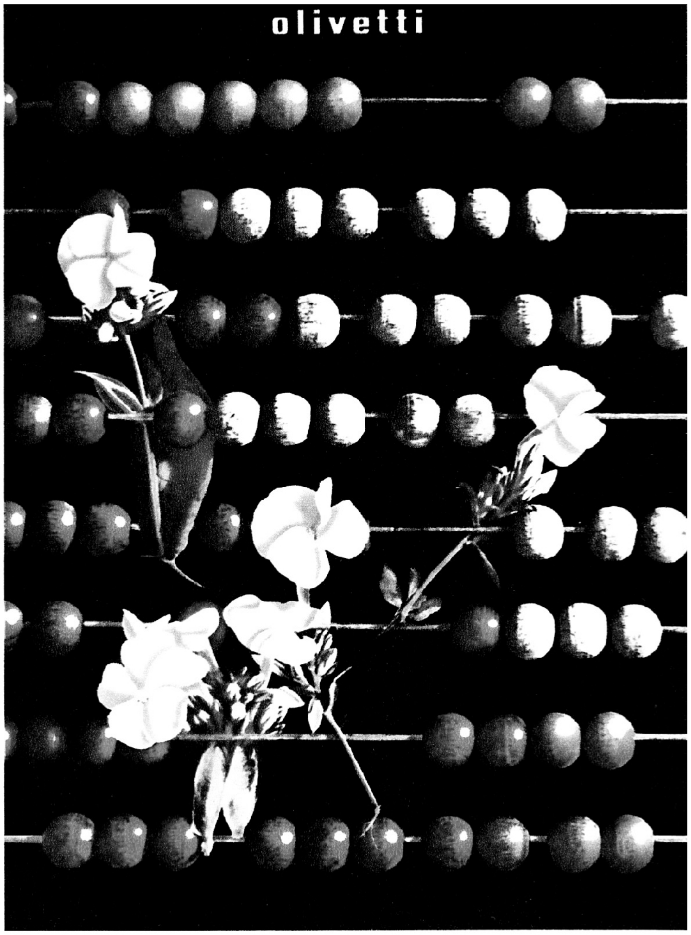
L. Sinisgalli and G. Pintori (1939)

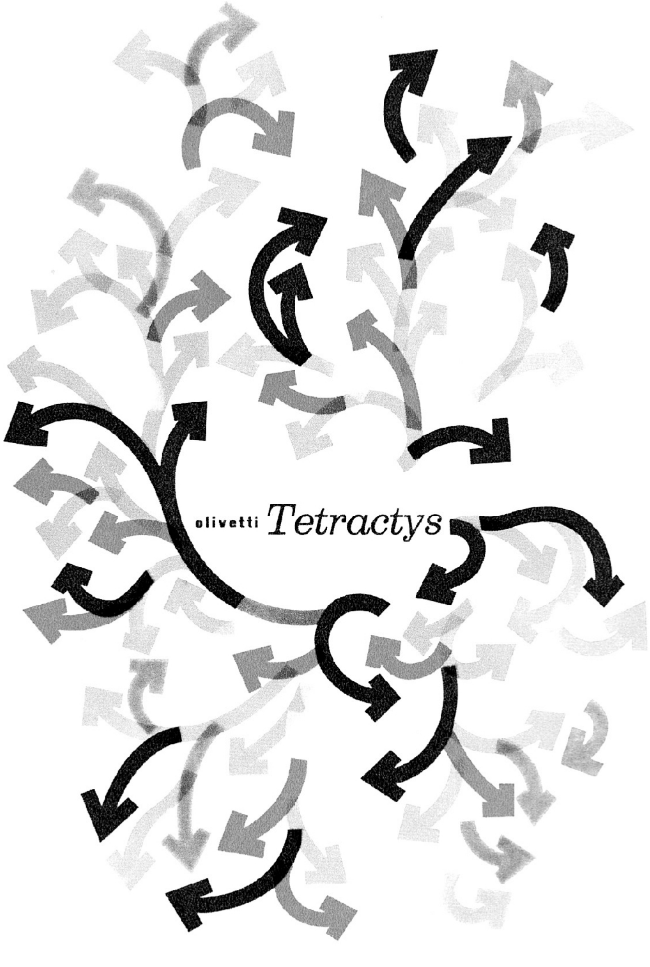
Right. From a publicity booklet of 1939.



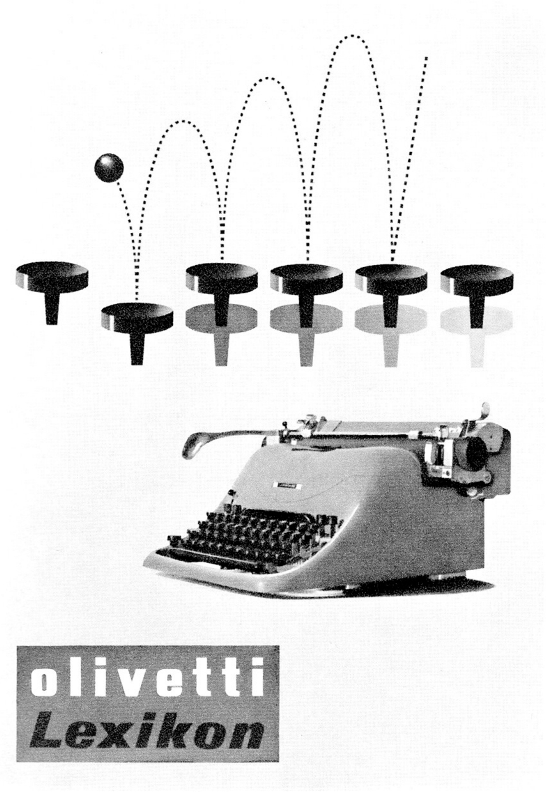

Divisumma
olivetti
herbert bayer 53

H. Bayer (1953)

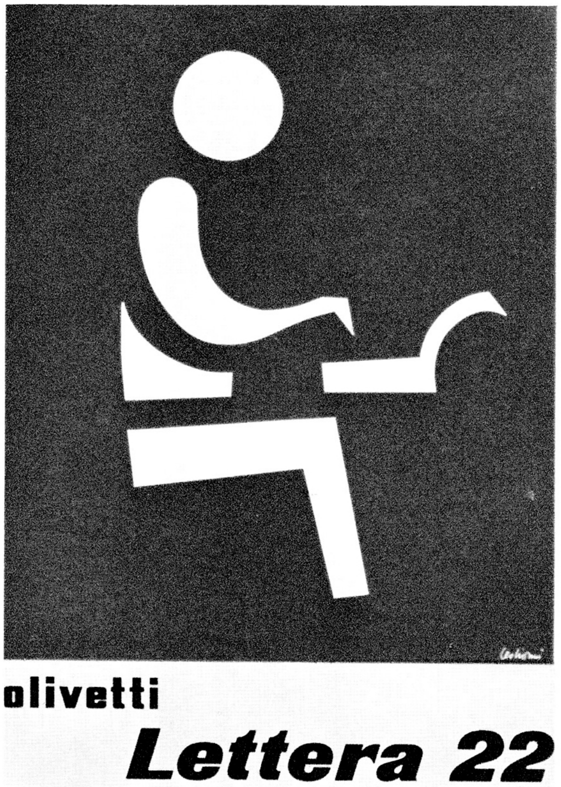



olivetti Tetractys

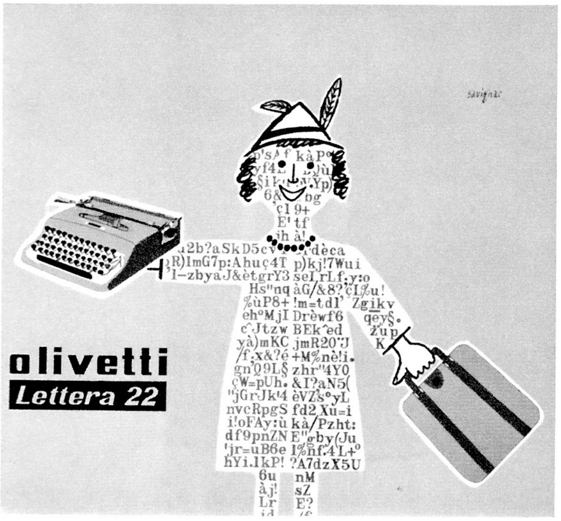
G. Pintori (1946 and 1956)


olivetti
Lexikon

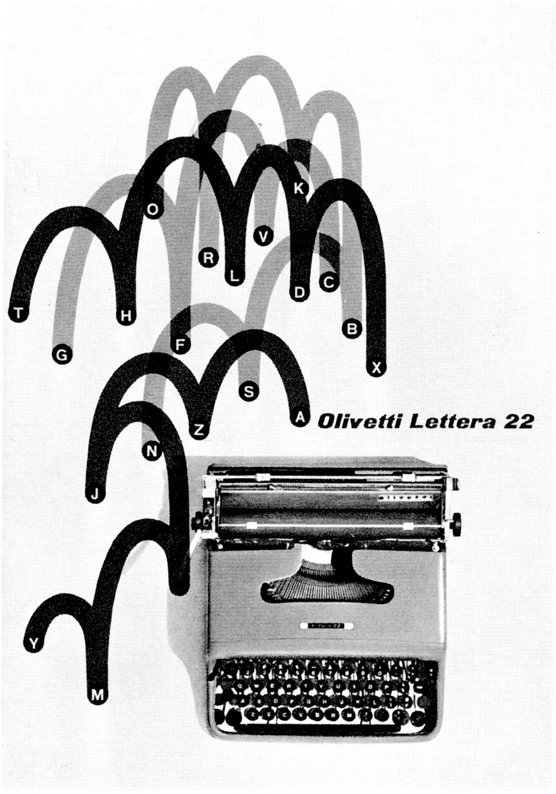
G. Pintori (1955)


olivetti
Lettera 22

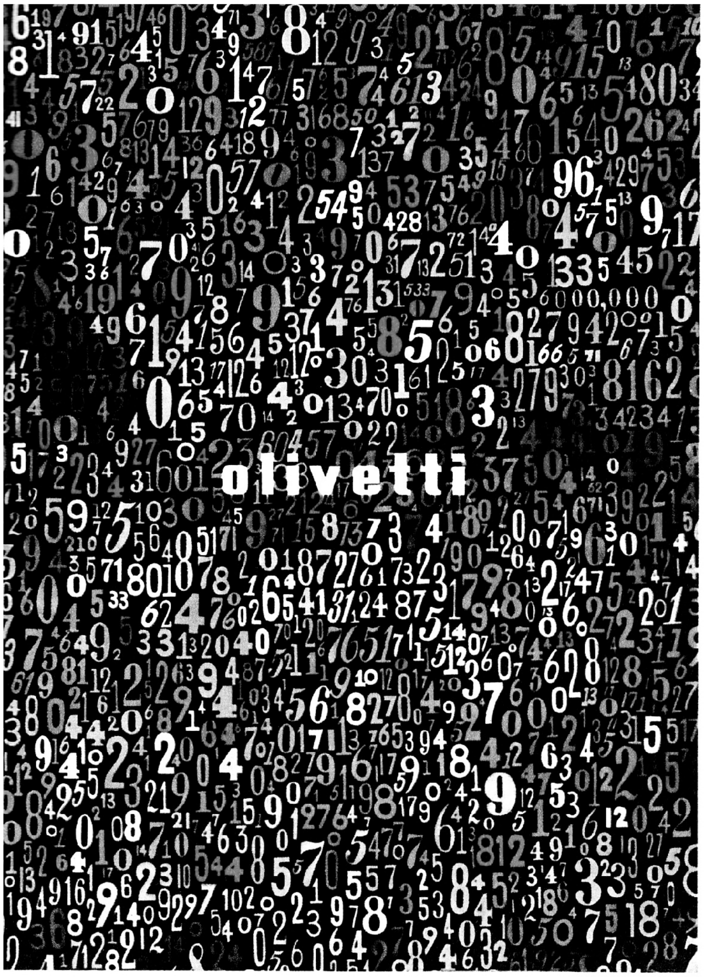
L. Lionni (1956)

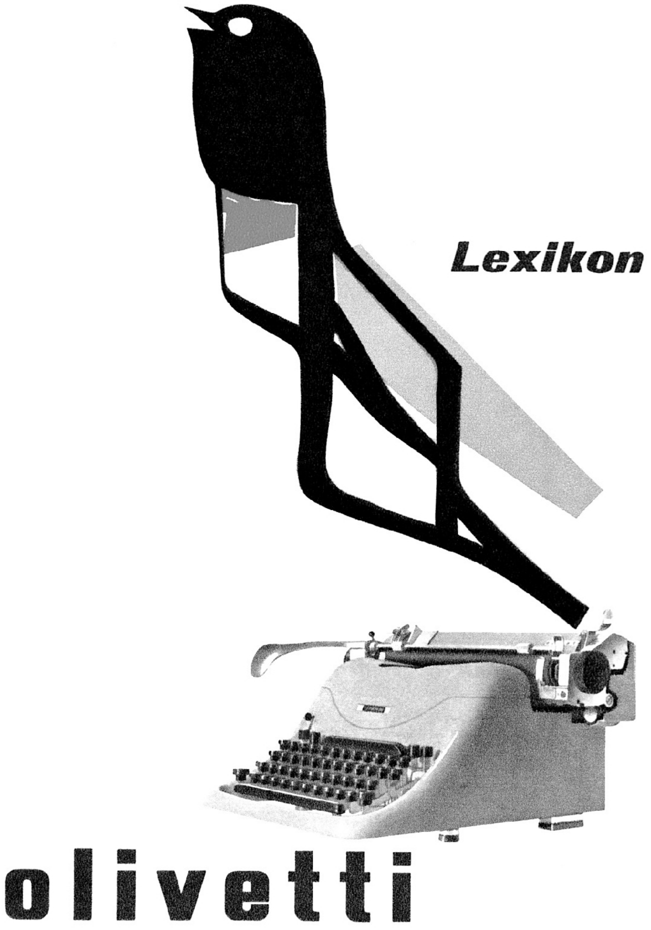

olivetti
Lettera 22

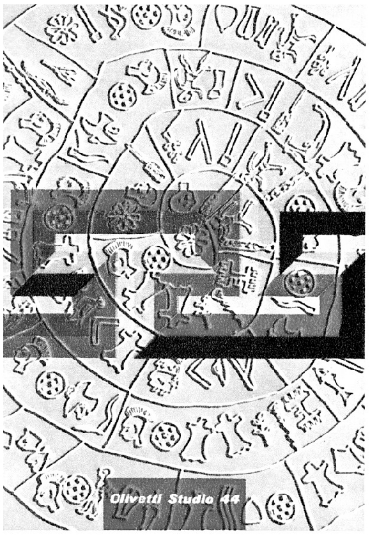
Savignac (1954)

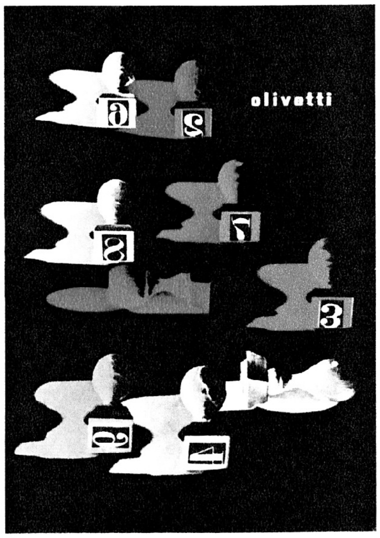

Olivetti Lettera 22

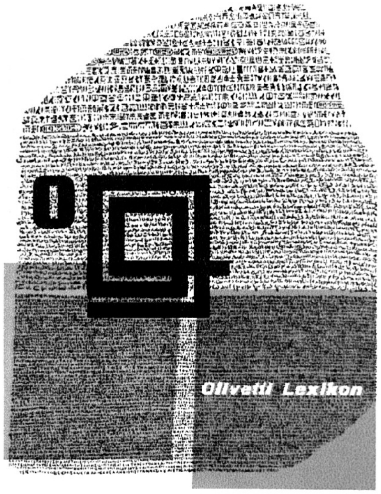
G. Pintori (1954)



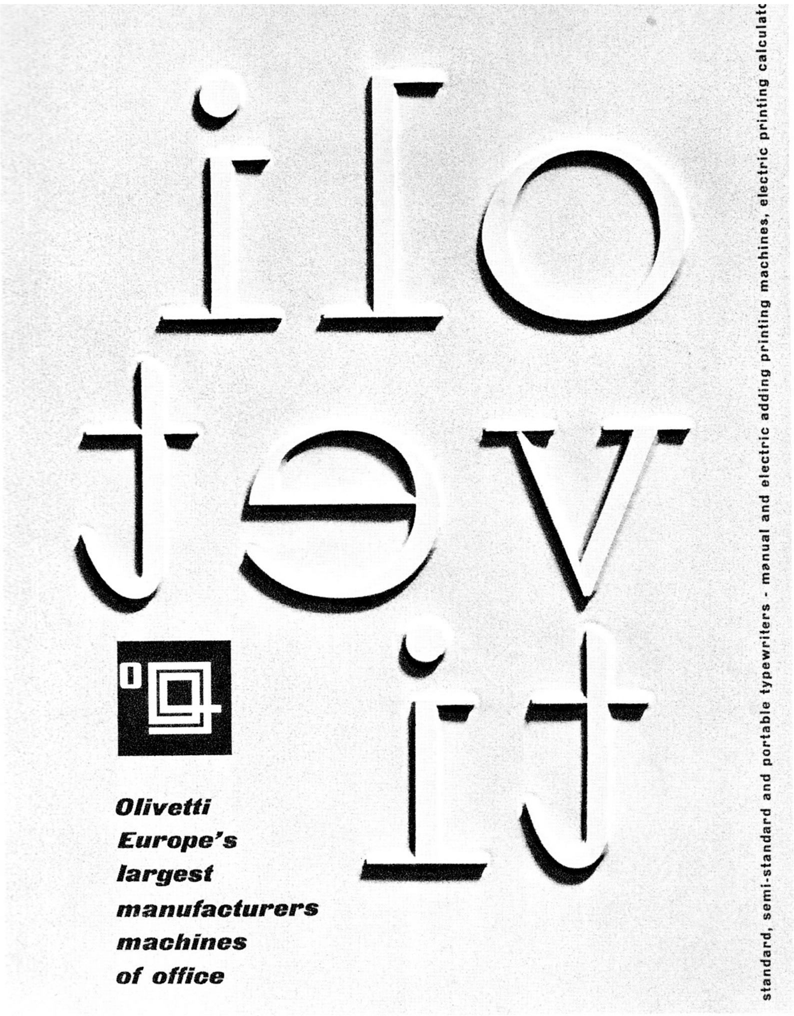

Lexikon
olivetti

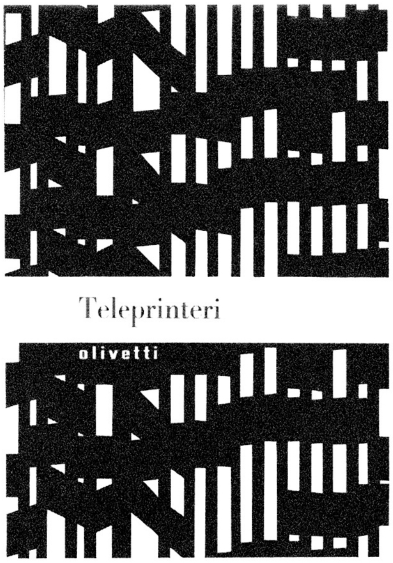

Olivetti Studio 44

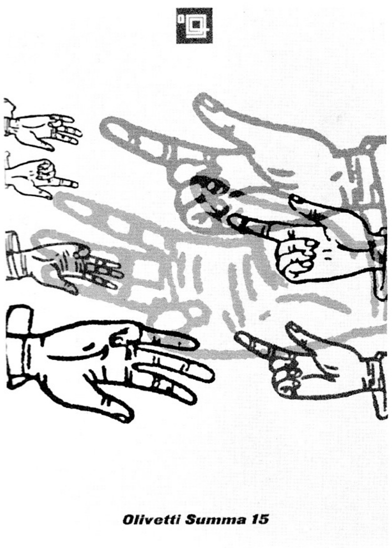


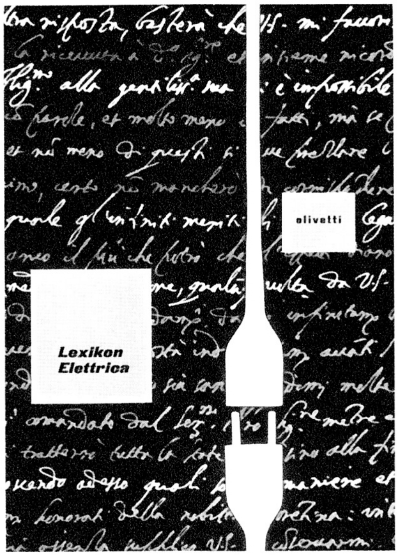

Olivetti Lexikon

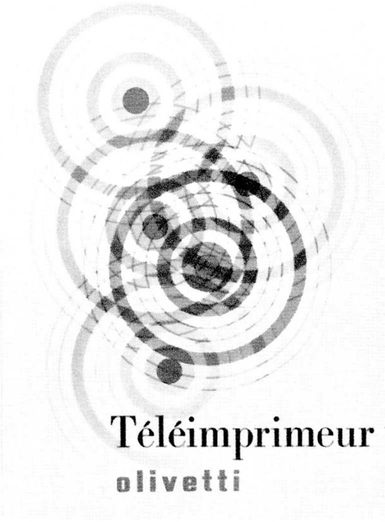
Covers of folders by G. Pintori, from 1953 to 1956. Right, above. Poster by M. Nizzoli, 1950.


Olivetti
Europe's
largest
manufacturers
machines
of office
standard, semi-standard and portable typewriters - manual and electric adding printing machines, electric printing calculato


Teleprinteri
olivetti

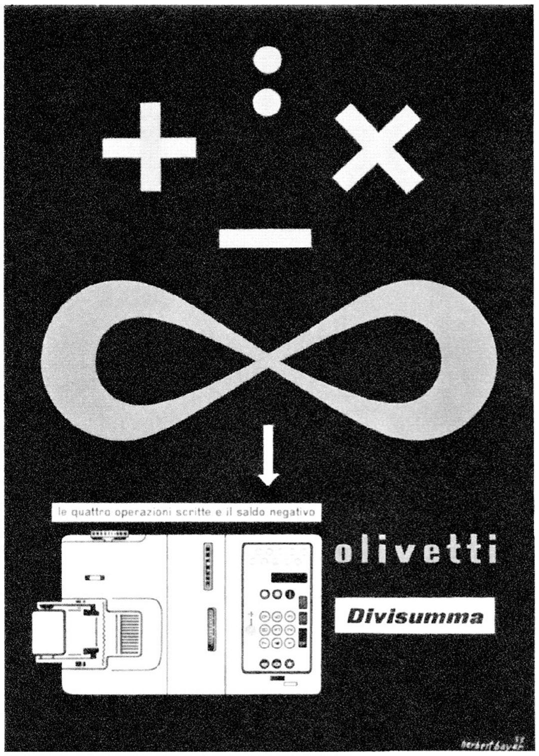

Olivetti Summa 15

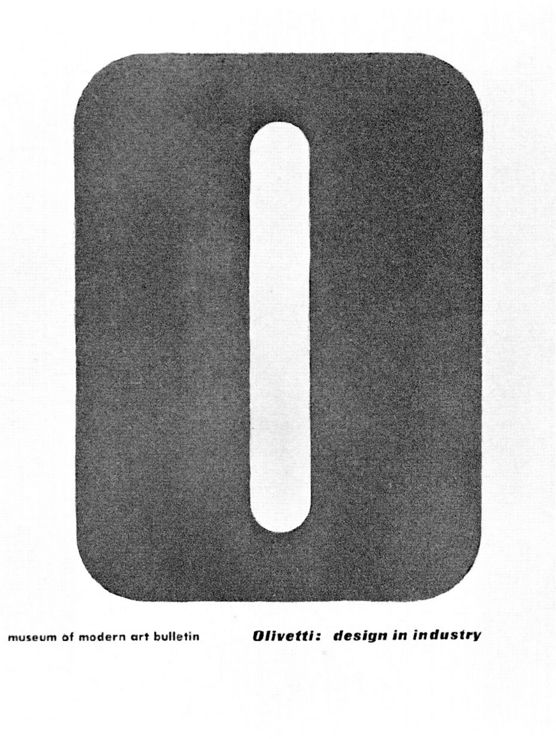

olivetti
Lexikon
Elettrica

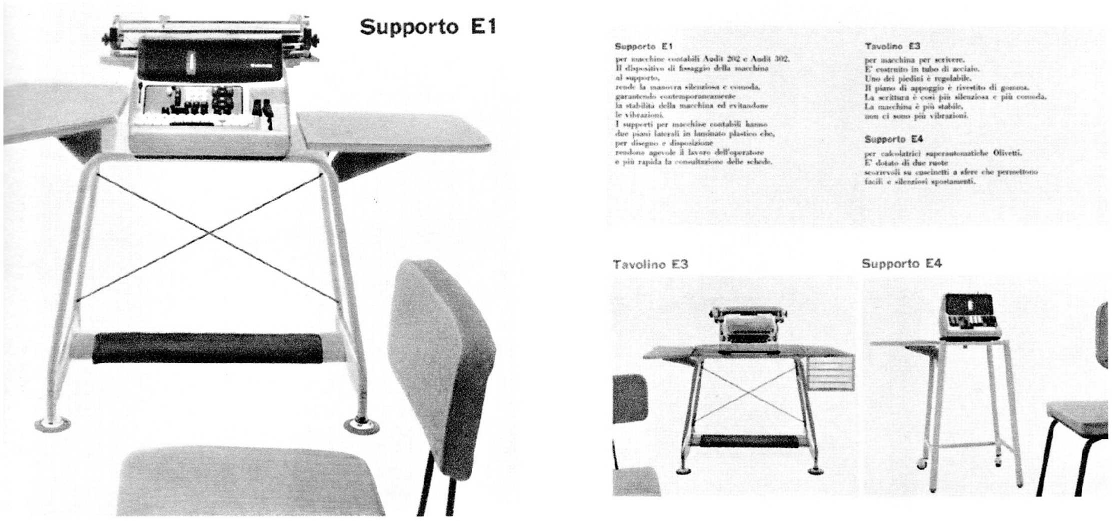

Téléimprimeur
olivetti

Advertising and cover designs by G. Pintori (1953–1957).

Right. Advertising for teleprinters (W. Ballmer, 1958).


le quattro operazioni scritte e il saldo negativo
olivetti
Divisumma
herbert bayer 53


museum of modern art bulletin
Olivetti: design in industry


Supporto E1

Supporto E1

per macchine contabili Audit 202 e Audit 302.
Il dispositivo di fissaggio della macchina
al supporto,
rende la manovra silenziosa e comoda,
garantendo contemporaneamente
la stabilità della macchina ed evitandone
le vibrazioni.
I supporti per macchine contabili hanno
due piani laterali in laminato plastico che,
per disegno e disposizione
rendono agevole il lavoro dell'operatore
e più rapida la consultazione delle schede.

Tavolino E3

per macchina per scrivere.
E' costruito in tubo di acciaio.
Uno dei piedini è regolabile.
Il piano di appoggio è rivestito di gomma.
La scrittura è così più silenziosa e più comoda.
La macchina è più stabile,
non ci sono più vibrazioni.

Supporto E4

per calcolatrici superautomatiche Olivetti.
E' dotato di due ruote
scorrevoli su cuscinetti a sfere che permettono
facili e silenziosi spostamenti.

Tavolino E3

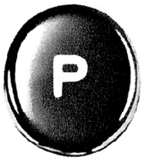
Supporto E4

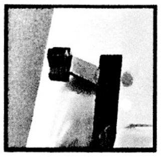
H. Bayer (1953); right, L. Lionni (1952).

Below: a layout by M. Huber (1957).

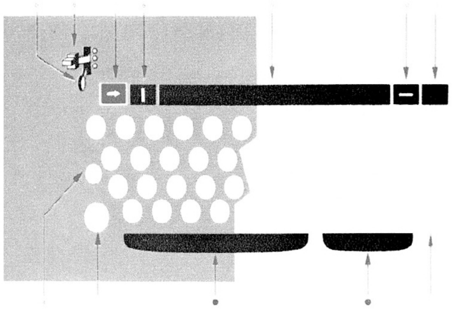
G. Pintori (1954–1958).

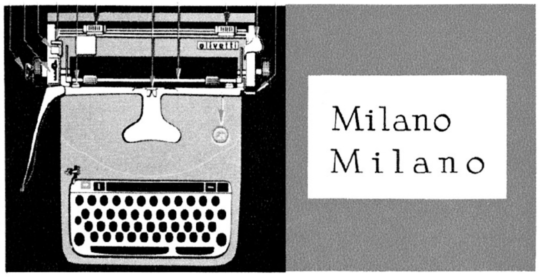
1 Tasti delle maiuscole
2 Barra spaziatrice di due unità
3 Barra spaziatrice di tre unità
4 Tasto fissamaiuscole
5 Leva del bicolore
6 Leva dello spaziatore automatico
7 Tasto del ritorno
8 Imposta arresti dell'incolonnatore
9 Barra dell'incolonnatore
10 Annulla arresti dell'incolonnatore
11 Liberamargine - Capoverso - Liberamartelletti
12 Frizione
13 Cambio dell'interlinea
14 Leva liberacarrello
15 Leva per la marginazione automatica
16 Guidacarte anteriori
17 Marginatori
18 Guidacaratteri
19 Telaio premicarta ribaltabile
20 Leva liberacarta
21 Reggistecca (protetto dal coperchio mobile)

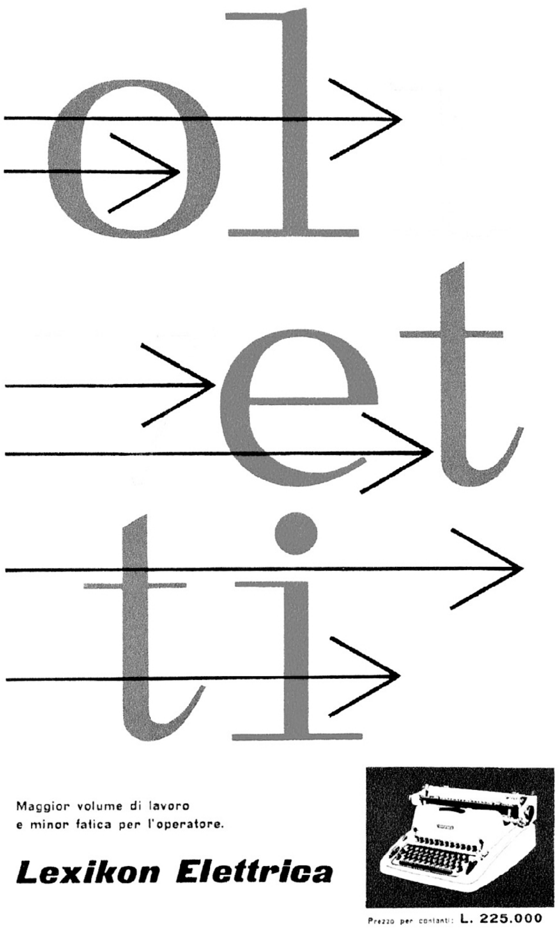




La spaziatura differenziata è data dalla diversa larghezza dei caratteri. Ognuna di queste larghezze è multipla di uno spazio unitario di mm. 0,8. Una leva situata sulla sinistra della Olivetti GRAPHIKA consente di comandare l'inserzione automatica e continuata di uno spazio unitario fra lettera e lettera, sia per porre in rilievo parole o frasi sia per aiutare chi scrive ad ottenere l'allineamento a destra. Per inserire invece ogni volta tre o due spazi si impieghi lo spaziatore di destra e quello di sinistra: questo ultimo fornisce lo spazio consueto fra le parole.



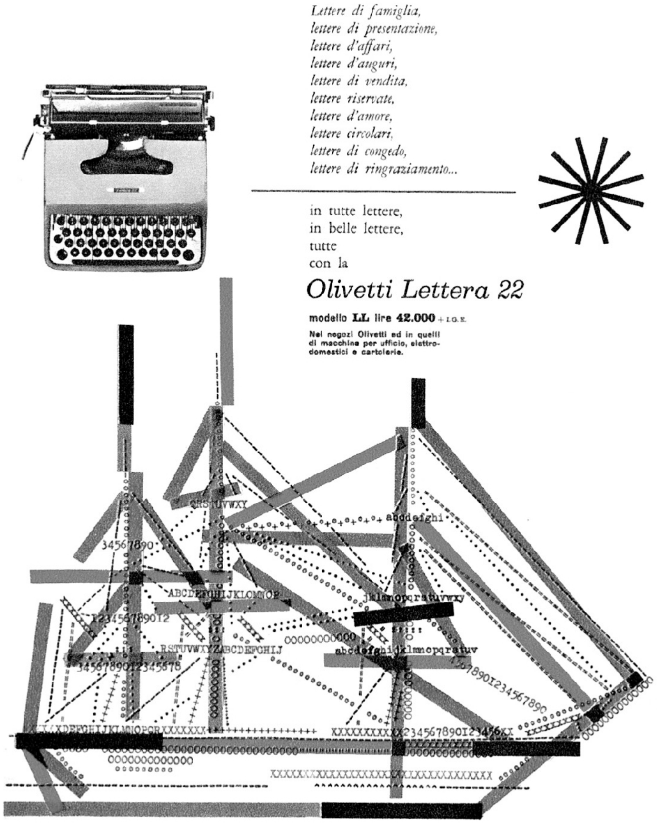




Maggior volume di lavoro
e minor fatica per l'operatore.

Lexikon Elettrica

Prezzo per contanti: L. 225.000



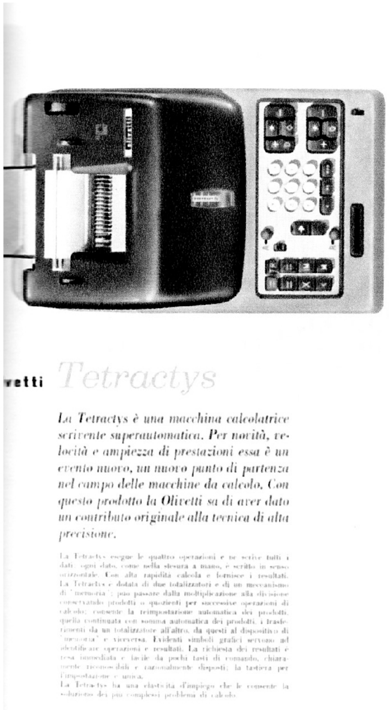
Lettere di famiglia,
lettere di presentazione,
lettere d'affari,
lettere d'auguri,
lettere di vendita,
lettere riservate,
lettere d'amore,
lettere circolari,
lettere di congedo,
lettere di ringraziamento...

in tutte lettere,
in belle lettere,
tutte
con la

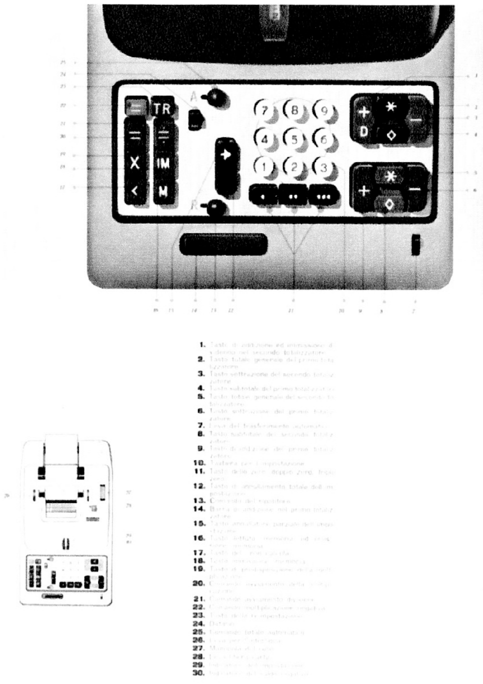
Olivetti Lettera 22

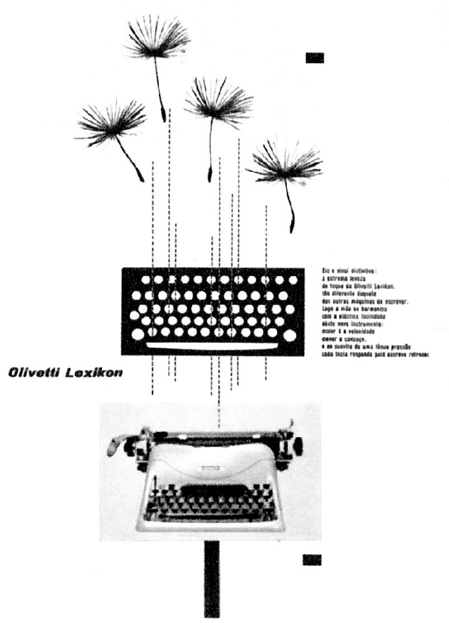
modello **LL** lire **42.000** + I.G.E.

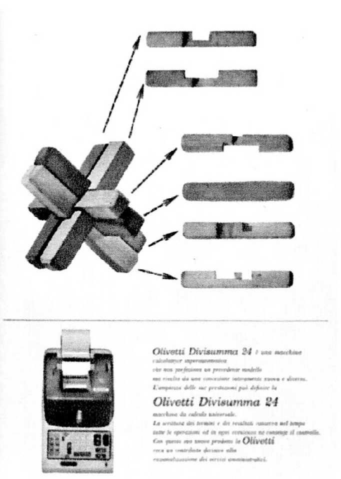
Nei negozi Olivetti ed in quelli di macchine per ufficio, elettrodomestici e cartolerie.

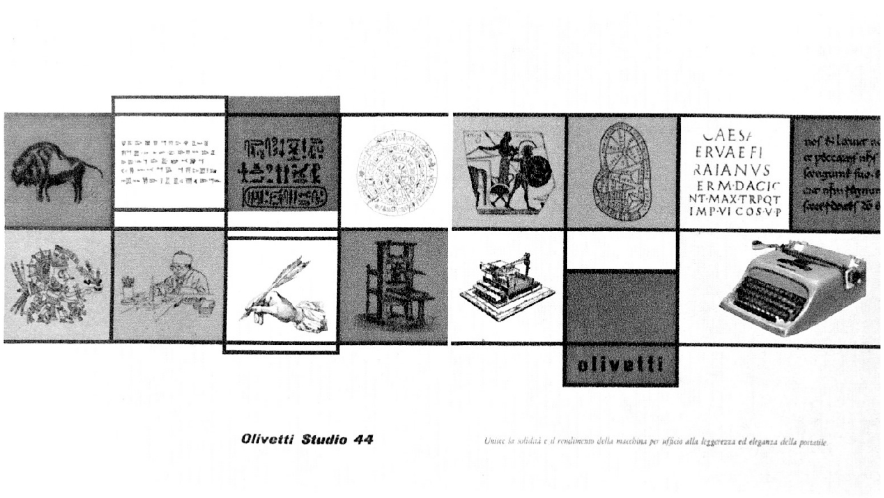

vetti
Tetractys

La Tetractys è una macchina calcolatrice scrivente superautomatica. Per novità, velocità e ampiezza di prestazioni essa è un evento nuovo, un nuovo punto di partenza nel campo delle macchine da calcolo. Con questo prodotto la Olivetti sa di aver dato un contributo originale alla tecnica di alta precisione.




Olivetti Lexikon

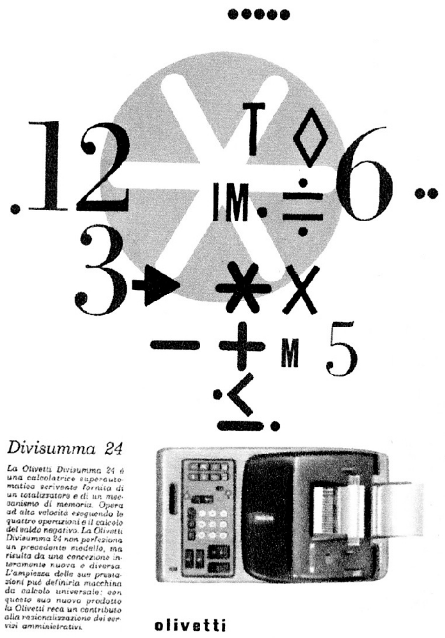

Olivetti Divisumma 24
Olivetti Divisumma 24
Olivetti


olivetti
Olivetti Studio 44

Unisce la solidità e il rendimento della macchina per ufficio alla leggerezza ed eleganza della portatile.

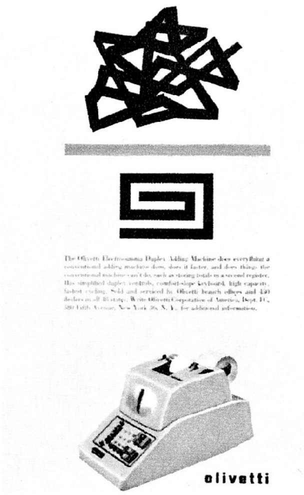
G. Pintori (1954–1956).

Right, above: F. Bassi (1955).



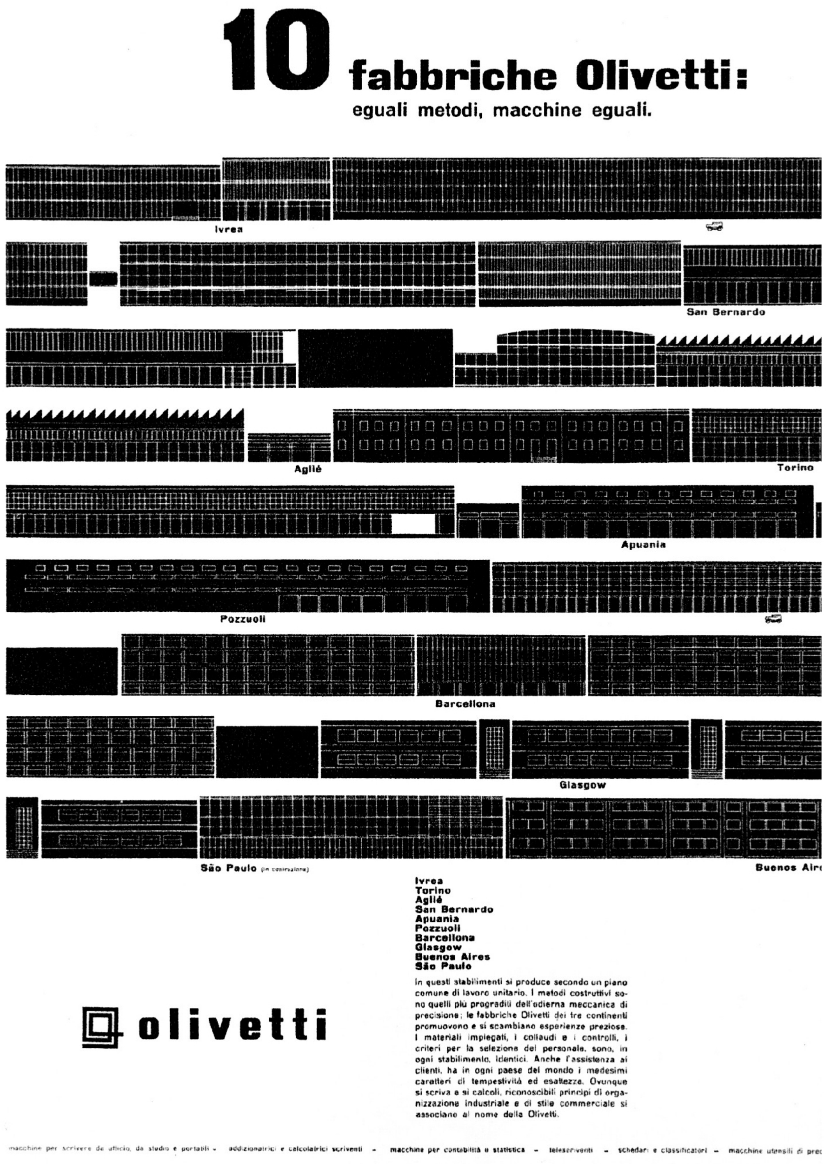
Divisumma 24

La Olivetti Divisumma 24 è una calcolatrice superautomatica scrivente fornita di un totalizzatore e di un meccanismo di memoria. Opera ad alta velocità eseguendo le quattro operazioni e il calcolo del saldo negativo. La Olivetti Divisumma 24 non perfeziona un precedente modello, ma risulta da una concezione interamente nuova e diversa. L'ampiezza delle sue prestazioni può definirla macchina da calcolo universale: con questo suo nuovo prodotto la Olivetti reca un contributo alla razionalizzazione dei servizi amministrativi.



The Olivetti Electrosumma Duplex Adding Machine does everything a conventional adding machine does, does it faster, and does things the conventional machine can't do, such as storing totals in a second register. Has simplified duplex controls, comfort-slope keyboard, high capacity, fastest cycling. Sold and serviced by Olivetti branch offices and 450 dealers in all 48 states. Write Olivetti Corporation of America, Dept. [illegible], 580 Fifth Avenue, New York 36, N. Y., for additional information.

A composition by L. Lionni, printed in American newspapers in 1956.



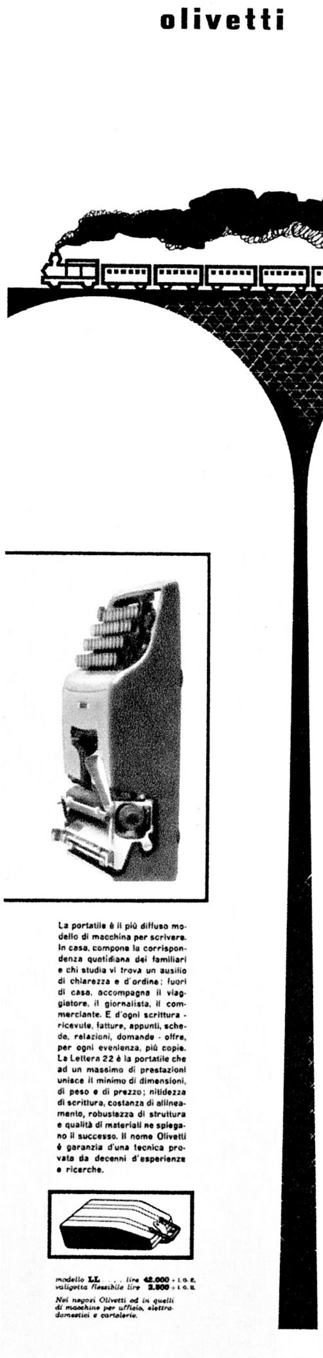
10 fabbriche Olivetti:
eguali metodi, macchine eguali.

Ivrea
Torino
Agliè
San Bernardo
Apuania
Pozzuoli
Barcellona
Glasgow
Buenos Aires
São Paulo

In questi stabilimenti si produce secondo un piano comune di lavoro unitario. I metodi costruttivi sono quelli più progrediti dell'odierna meccanica di precisione; le fabbriche Olivetti dei tre continenti promuovono e si scambiano esperienze preziose. I materiali impiegati, i collaudi e i controlli, i criteri per la selezione del personale, sono, in ogni stabilimento, identici. Anche l'assistenza ai clienti, ha in ogni paese del mondo i medesimi caratteri di tempestività ed esattezza. Ovunque si scriva e si calcoli, riconoscibili principi di organizzazione industriale e di stile commerciale si associano al nome della Olivetti.

macchine per scrivere da ufficio, da studio e portatili - addizionatrici e calcolatrici scriventi - macchine per contabilità e statistica - telescriventi - schedari e classificatori - macchine utensili di prec

Some of the best Olivetti advertising has appeared in the daily press. On this page and opposite, some examples designed by G. Pintori in 1957.



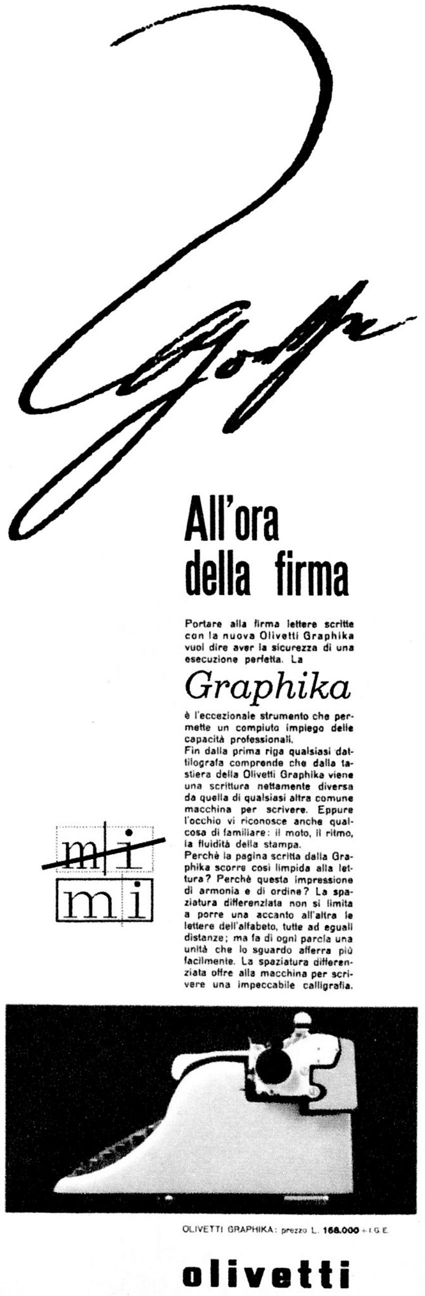
olivetti

Olivetti Lettera 22

La portatile è il più diffuso modello di macchina per scrivere. In casa, compone la corrispondenza quotidiana dei familiari e chi studia vi trova un ausilio di chiarezza e d'ordine; fuori di casa, accompagna il viaggiatore, il giornalista, il commerciante. E d'ogni scrittura - ricevute, fatture, appunti, schede, relazioni, domande - offre, per ogni evenienza, più copie. La Lettera 22 è la portatile che ad un massimo di prestazioni unisce il minimo di dimensioni, di peso e di prezzo; nitidezza di scrittura, costanza di allineamento, robustezza di struttura e qualità di materiali ne spiegano il successo. Il nome Olivetti è garanzia d'una tecnica provata da decenni d'esperienze e ricerche.

modello **LL** . . . *lire* **42.000** + I.G.E.
valigetta flessibile lire **3.800** + I.G.E.

Nei negozi Olivetti ed in quelli di macchine per ufficio, elettrodomestici e cartolerie.



All'ora della firma

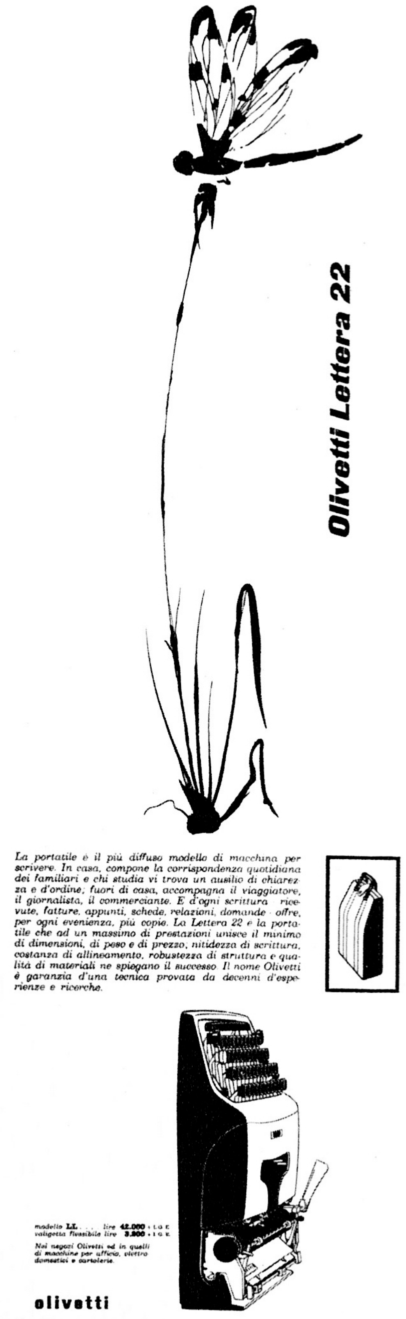
Portare alla firma lettere scritte con la nuova Olivetti Graphika vuol dire aver la sicurezza di una esecuzione perfetta. La

Graphika

è l'eccezionale strumento che permette un compiuto impiego delle capacità professionali.
Fin dalla prima riga qualsiasi dattilografa comprende che dalla tastiera della Olivetti Graphika viene una scrittura nettamente diversa da quella di qualsiasi altra comune macchina per scrivere. Eppure l'occhio vi riconosce anche qualcosa di familiare: il moto, il ritmo, la fluidità della stampa.
Perchè la pagina scritta dalla Graphika scorre così limpida alla lettura? Perchè questa impressione di armonia e di ordine? La spaziatura differenziata non si limita a porre una accanto all'altra le lettere dell'alfabeto, tutte ad eguali distanze; ma fa di ogni parola una unità che lo sguardo afferra più facilmente. La spaziatura differenziata offre alla macchina per scrivere una impeccabile calligrafia.

OLIVETTI GRAPHIKA: prezzo L. **168.000** + I.G.E.

olivetti



Olivetti Lettera 22

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Nei negozi Olivetti ed in quelli di macchine per ufficio, elettrodomestici e cartolerie.

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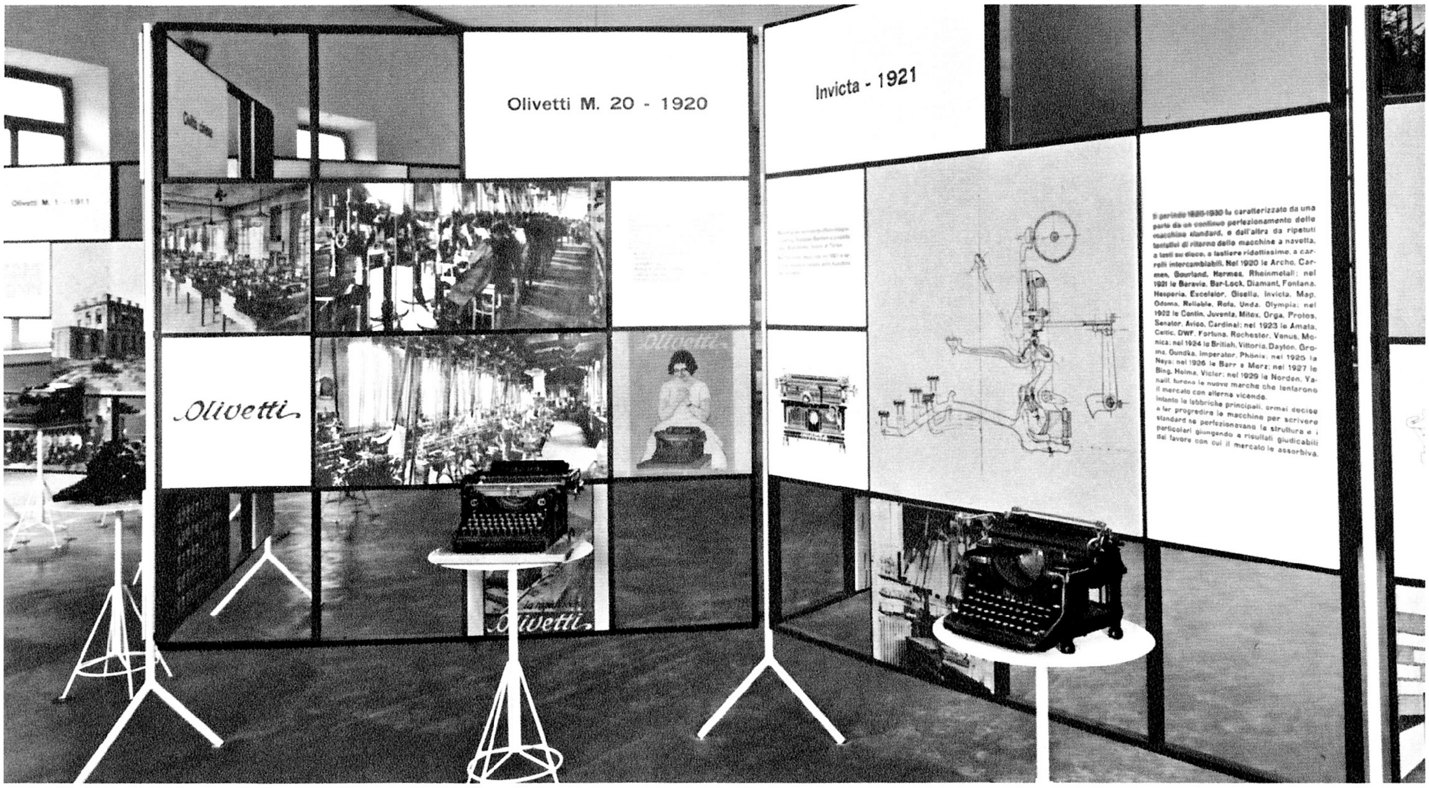
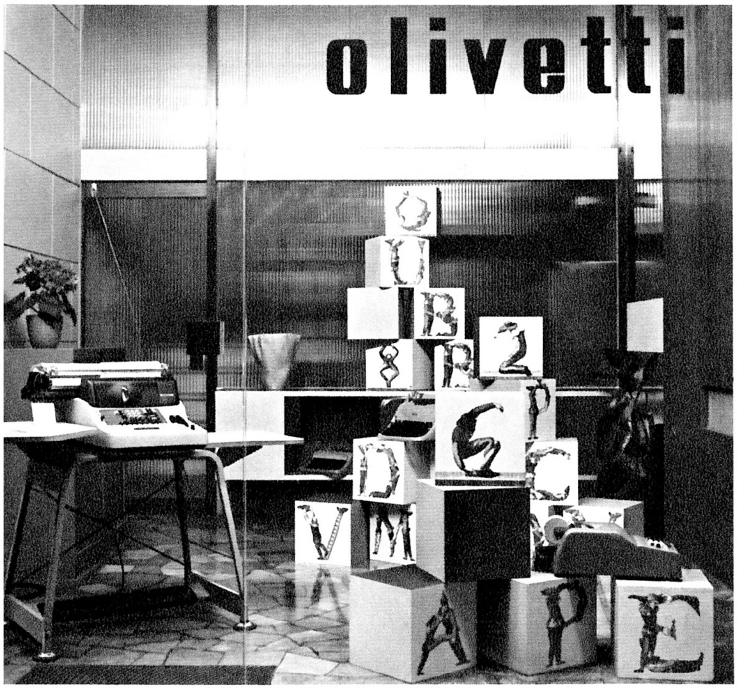
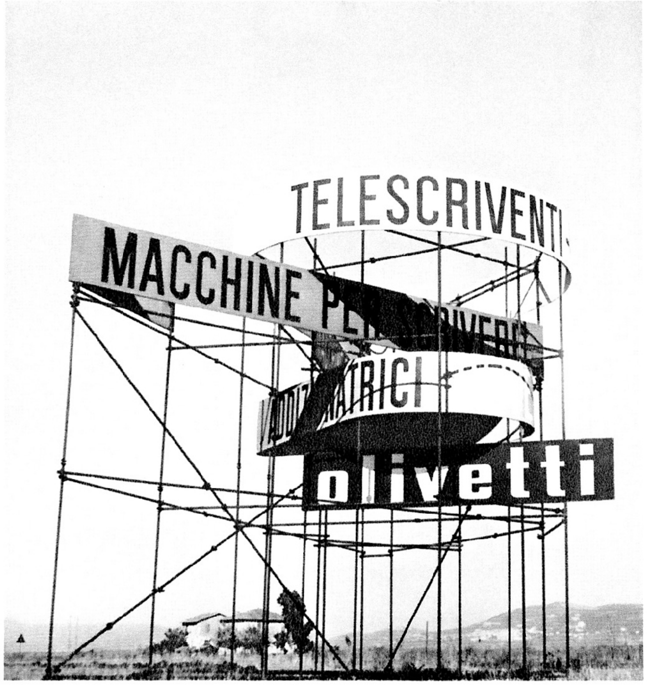
Historical exhibition of writing and typewriters, arranged by Giovanni Pintori in 1956, in the Museum of Science and Technics, Milan.

Left, below: window display, by Egidio Bonfante, in the Viareggio store, during the Carnival of 1956; right, billboard by Pintori.

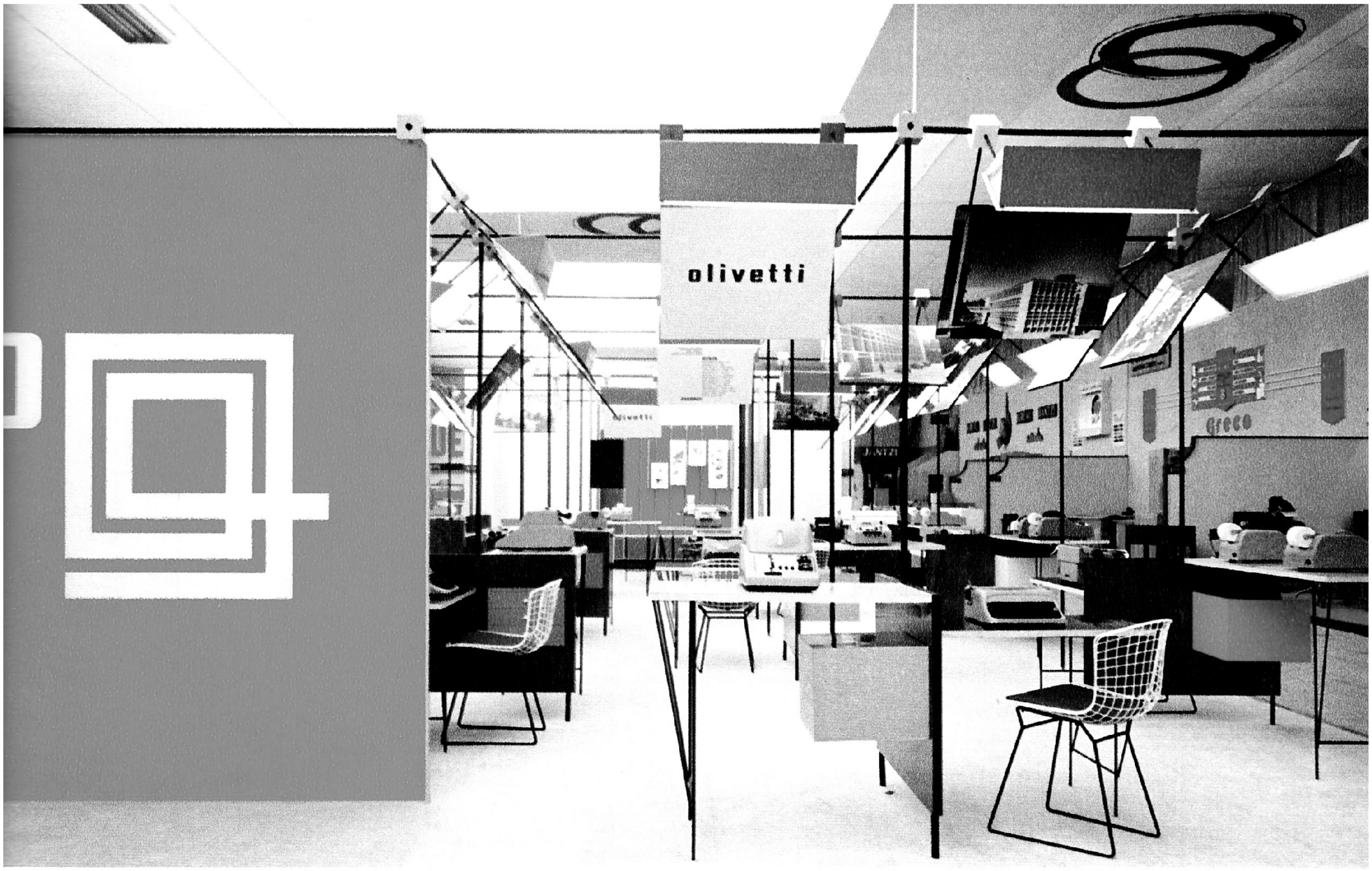

Olivetti M. 20 - 1920
Invicta - 1921
Olivetti
Olivetti




TELESCRIVENTI
MACCHINE PER SCRIVERE
ADDIZIONATRICI
olivetti

Right. The Olivetti pavilion, by F. Bassi, at the International Office Machine Exhibition, Paris, 1956.

Below, the Olivetti section of the Italian pavilion at the Brussels Universal Exhibition, 1958. Architects: Rogers, Peressutti and Gardella, with the collaboration of F. Bassi.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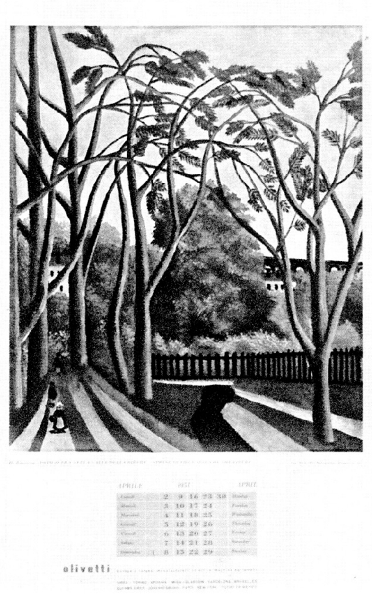
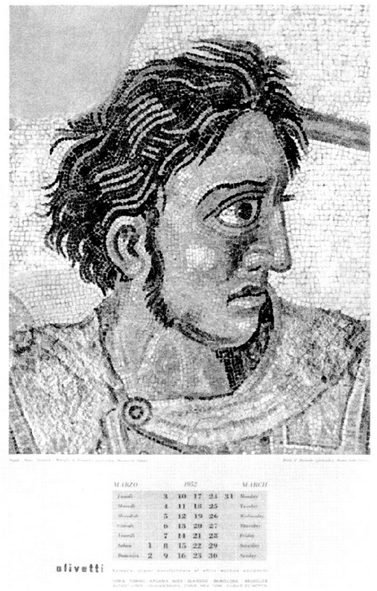
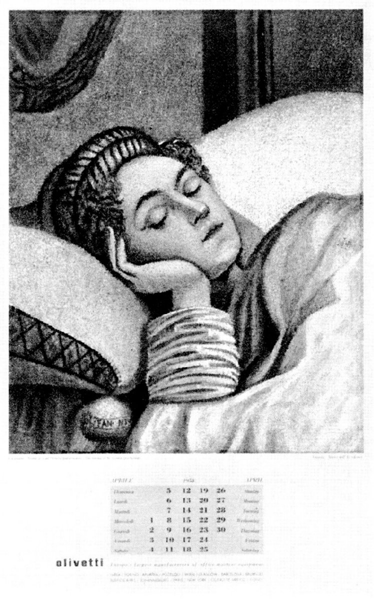
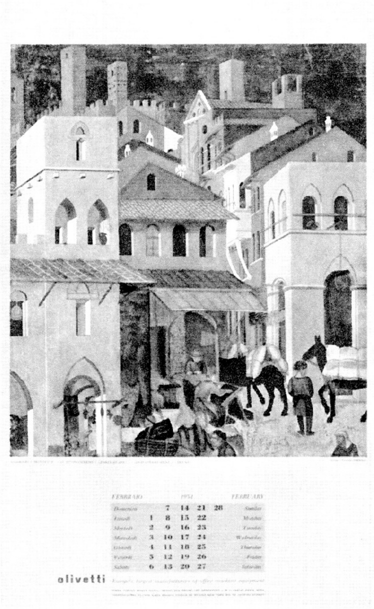
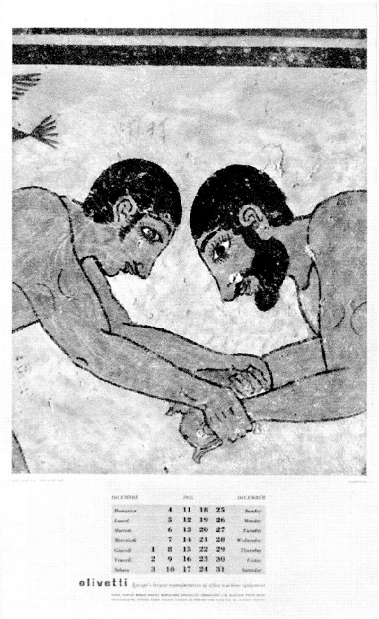
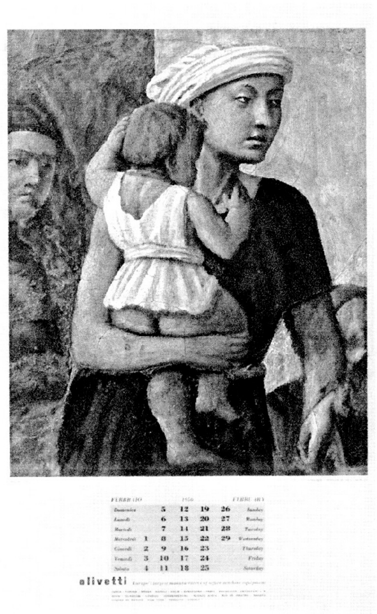
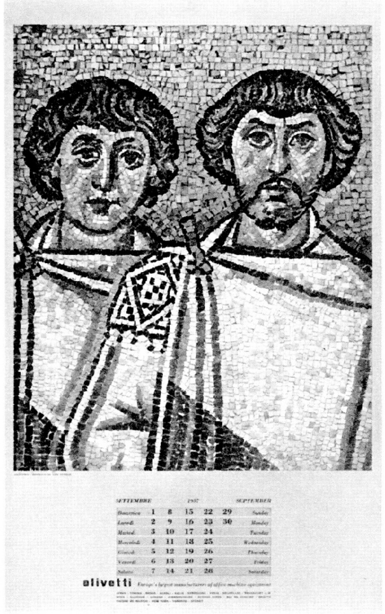
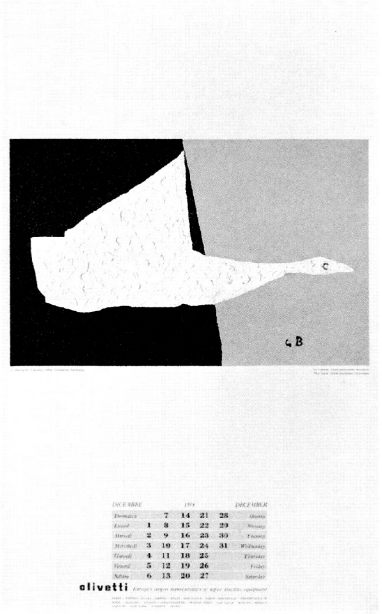
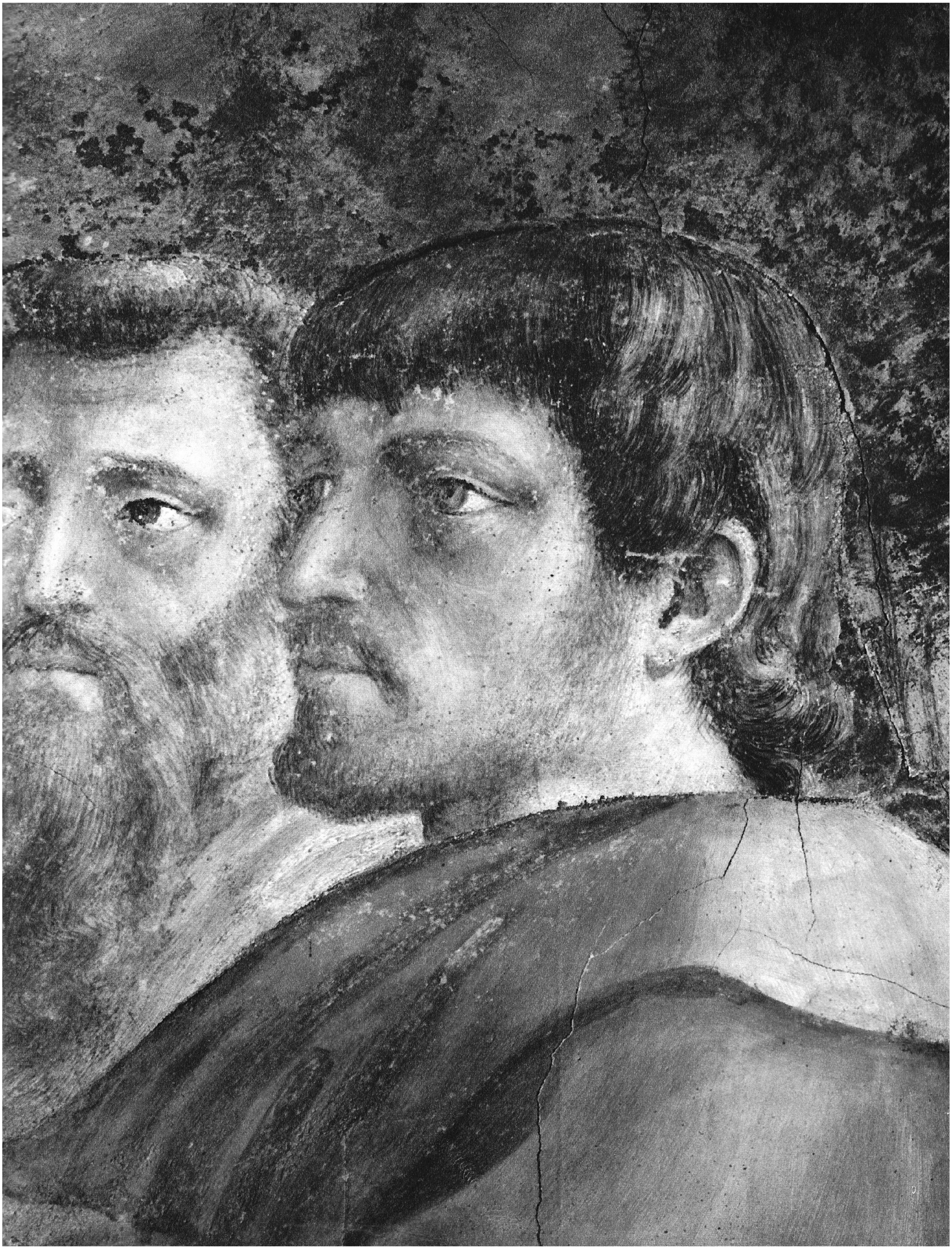
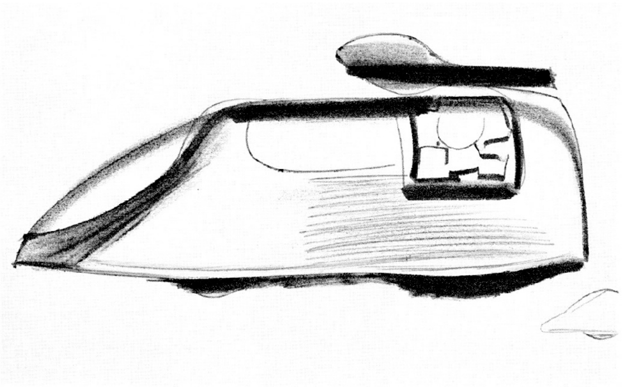
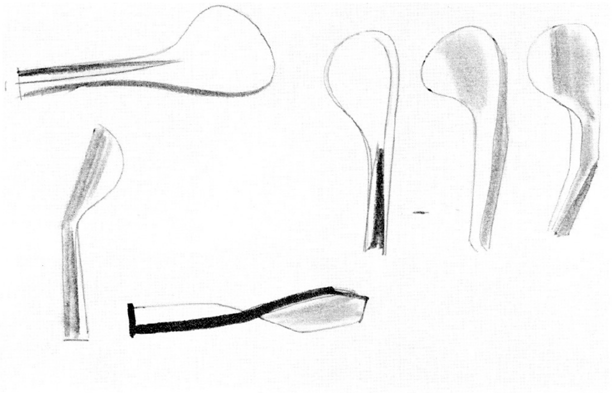









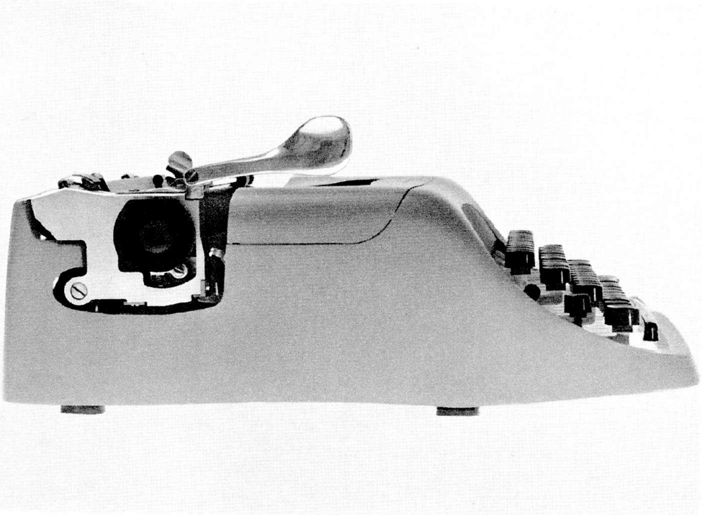
The calendars:
Le Douanier Rousseau (1951),
Pompeiian painting (1952),
Carpaccio (1953),
Ambrogio Lorenzetti (1954),
Etruscan painting (1955),
Masaccio (1956), Ravenna mosaics (1957),
Braque (1958).

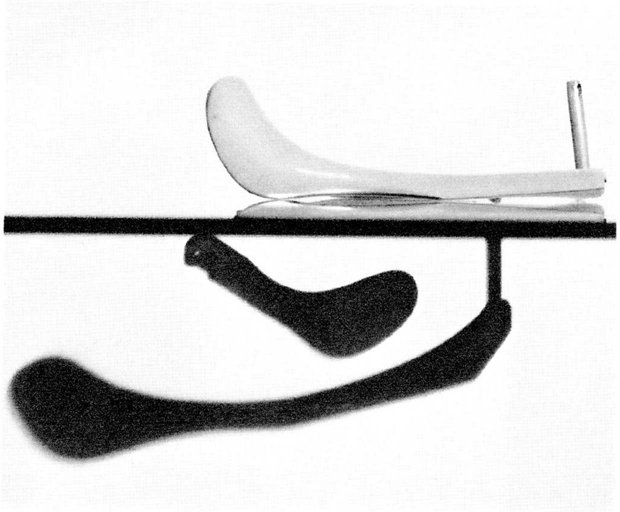
Right, a plate from the Masaccio calendar.



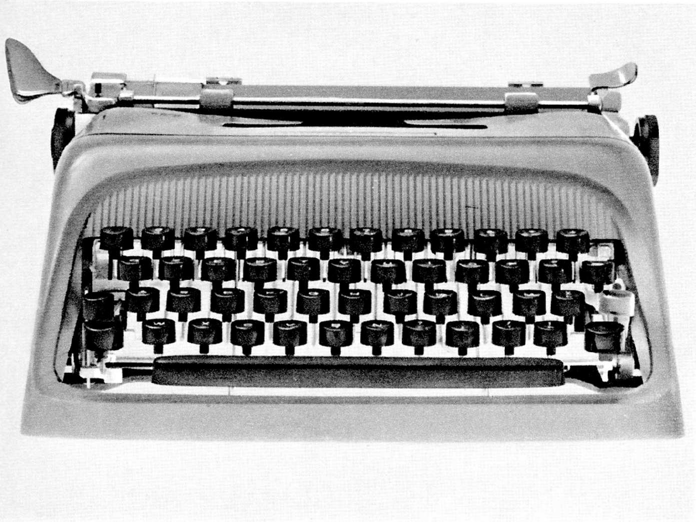


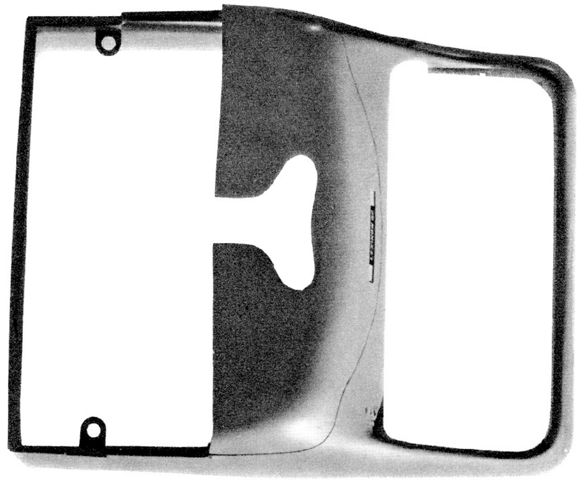






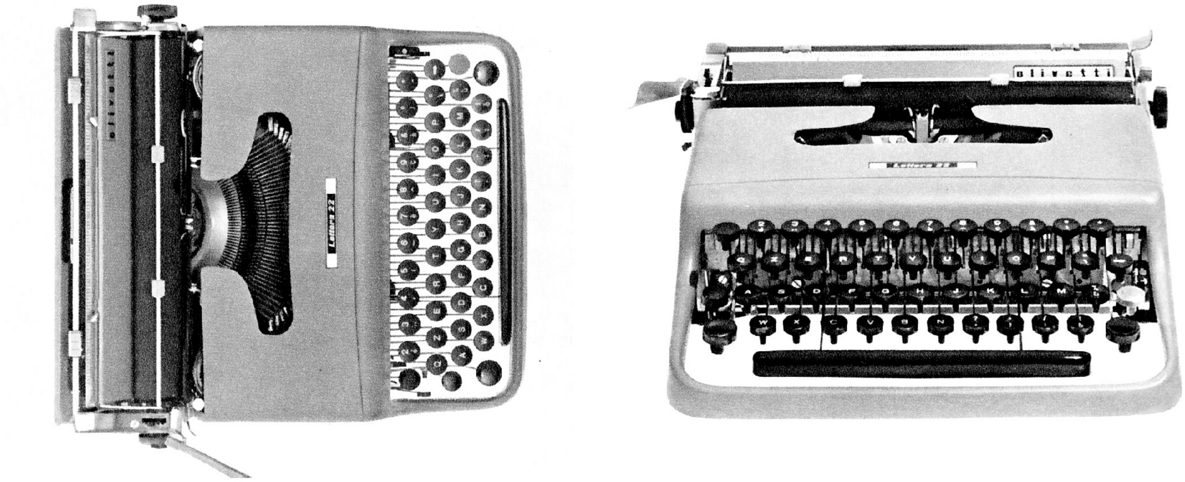
The "Studio 44", from sketch to model.

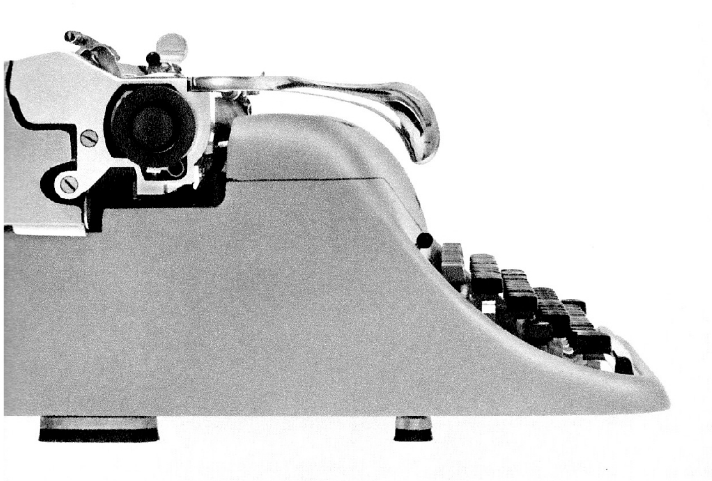




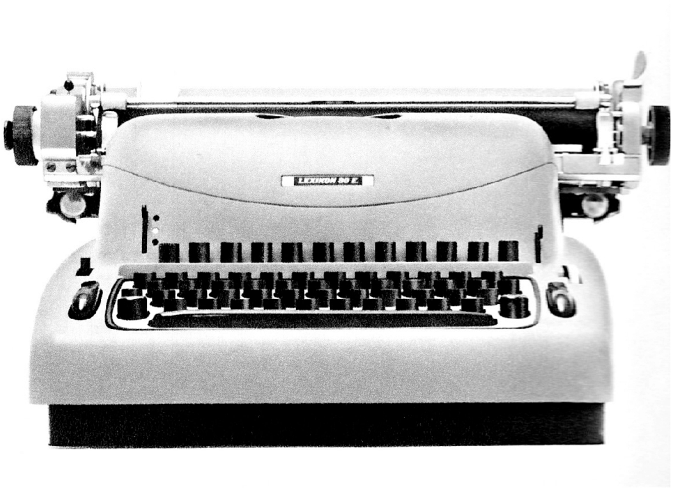
The "Lexikon"'s body was evolved by Marcello Nizzoli, who has developed a series of variations and details—such as the line-space lever—which are counted among the most successful achievements of Italian industrial design.

The "Lettera 22"


olivetti
Lettera 22

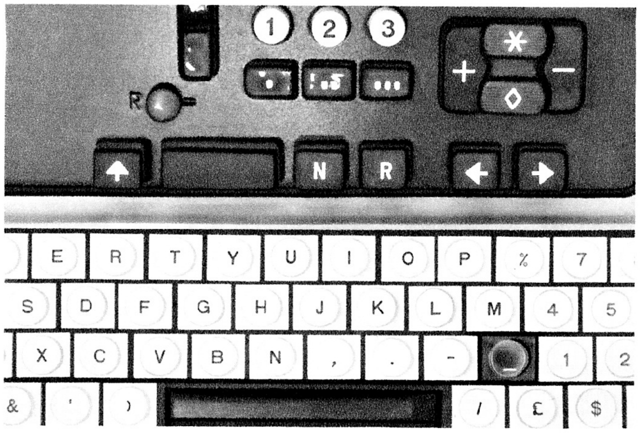


the "Lexikon 80"


LEXIKON 80 E.

the "Lexikon Elettrica"

The letter keys of the "Audit 302"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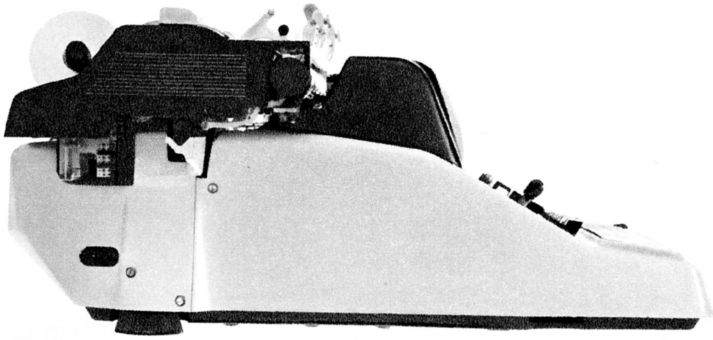
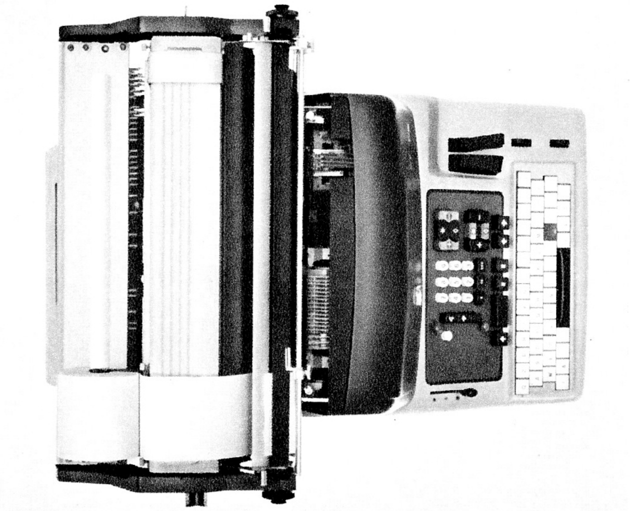
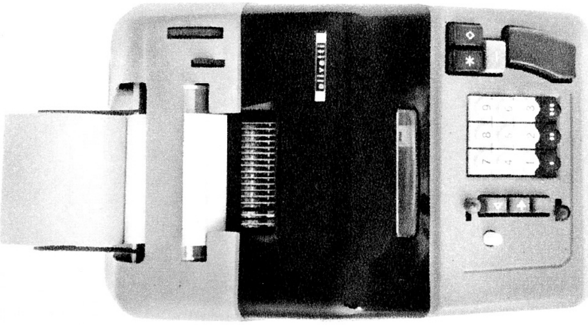
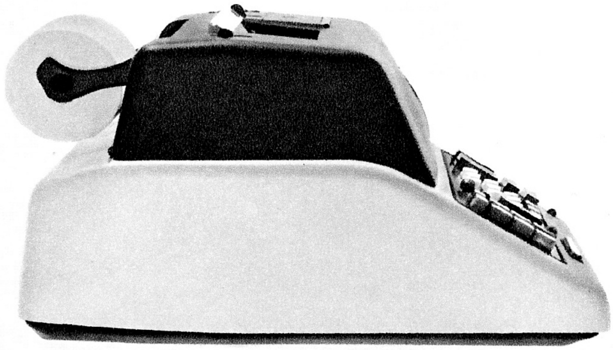
the "Audit 302"

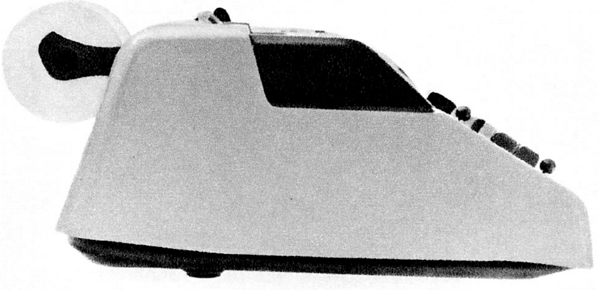






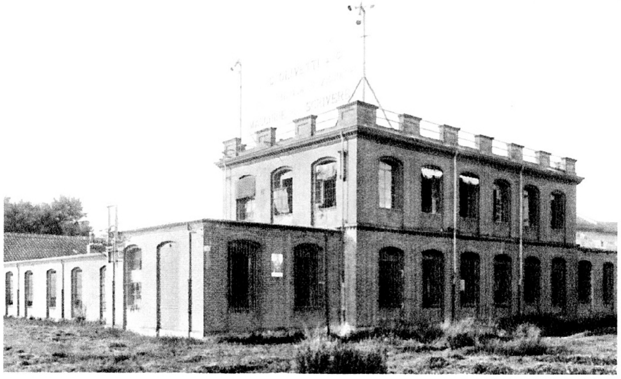


the "Divisumma 24"



the "Elettrosumma 22"

Olivetti 1908 - 1958: A Brief Chronicle



1908

The Olivetti company is established:
"In the year 1908, the 29th of October, in the city of Ivrea, on the property of the engineer Camillo Olivetti and in the presence of the undersigned, Cavaliere Felice Gianotti, royal notary enrolled in the College of Notaries of Ivrea, custodian and treasurer of the Notarial Archive of this district—in the presence of the witnesses named below—present Messrs.: Camillo Olivetti; Alberto Quilico; Gioberti Jona, Vincenzo Quaglio; Ugo Ambrosetti; Alberto Aluffi; Mario Rossi; Dino Gatta, who declares that he is acting on his own behalf and representing Messrs.: Carlo Sacerdoti; Giovanni Porcheddu; the nobleman Lorenzo Verdun di Cantogno; Enrico Guagno."
The initial capital is 350,000 lire.
Camillo Olivetti's share—200,000—represents the value of the factory building formerly occupied by C.G.S. (an electrical precision instruments plant founded by Camillo Olivetti in 1896) and of other land holdings. The other stockholders, relatives and friends in Ivrea, contribute to buy the first Brown and Sharpe automatic lathes and the first milling machines, later selected by Camillo in the United States.
The plant is manned by the first twenty workers. It has a floor space of 500 square meters.

1908

Camillo Olivetti goes to the United States, to study the latest methods and techniques.
Meanwhile a team of workmen is engaged on a first key and type-bar linkage project, designed by Camillo. Among the men are Valentino Prelle, Giuseppe Trompetto, Pietro Bronzini and Stefano Peretti. Domenico Quaccia is hired at this time. These men were later awarded the company's first "stars for meritorious work".

1909

Domenico Burzio takes over the technical management of the plant. "The preliminary studies"—Camillo Olivetti later wrote—"took me more than two years, and it was only in the spring of 1909 that the shop really began to function. In the technical management I needed a competent, energetic, and completely trustworthy assistant. Nobody was more suitable than Burzio. He gladly accepted my invitation to take over the position of technical director of the new shop, and thus began our new collaboration . . ."

1909

The first welfare projects for the employees: a mutual fund is established in the plant, to which management and employees contribute equally.

1909

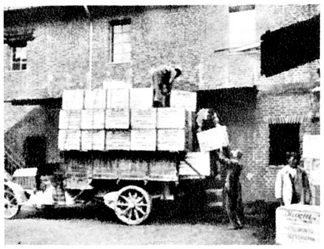
Applications for jobs begin to flow into the plant. Before hiring new men, Camillo Olivetti interviews each of them.

1910

Factory activity is concentrated on construction and assembly of the M 1, the first typewriter to be made in Italy.

1911

The M 1 is exhibited at the World's Fair in Turin. In the official catalogue of the Fair, the Olivetti company is discribed as "the first and only typewriter factory in Italy", and its product as: "a typewriter of the first class, patented by C. Olivetti (Italy, France, Germany, England, Austria, Switzerland, and the United States). Original design, legible characters, standard keyboard, two-colored ribbon, decimal tabulator, back-space, multiple margin adjustment, modern workmanship, absolute precision".



1911

The Olivetti company wins a competition to furnish 100 typewriters to the Italian Navy.

1912

The Olivetti company acquires new backers to finance its development. "... The struggle was hard", Adriano Olivetti was to say later, evoking the early days of his father's company. "The machine, produced under technical conditions that were far behind with respect to America, was still complicated and expensive. Camillo Olivetti was not discouraged; he tripled his efforts in the sales department, faced squarely serious financial difficulties, and sought new partners. Among them were the Simonis brothers, Senator Francesco Ruffini, Senator Luigi Albertini, Senator Luigi Della Torre, the Marra brothers of Ivrea, the lawyer Vittorio Olivetti of Biella, the engineer Giacinto Prandi, Count Paolo Prat..."
During the year the number of employees rises to 75.

1912

The first sensitive drilling machines, designed by Camillo Olivetti, are constructed.

1912

The first branch office is opened in Milan in Piazza della Scala, 3. Personnel comprises a director, two salesmen, a clerk and a mechanic. The machines are delivered on a tricycle. Camillo Olivetti often accompanies the mechanic-delivery boy to supervise the demonstration or maintenance of the machines.

1912

In an article published in the 25/26th issue of the Turin magazine "L'Ufficio Moderno", Camillo Olivetti, describing the M 1, writes: "The esthetic side of the machine's design also received particular attention. A typewriter should not be a geegaw for the drawing room, ornate and in questionable taste. It should have an appearance that is serious and elegant at the same time."

1913

The State postal services order fifty typewriters.

1913

Branch offices are opened in Genoa, Rome, and Naples.
"... Camillo Olivetti", recalls Giuseppe Pero, one of his early associates, "followed a path that was partly new at that time: instead of entrusting sales to an ordinary commercial agency, he decided to create his own sales system with branch offices and distributors."
Acceptance of the M 1 on the market is still hampered by a wide-spread prejudice against Italian products. As the commercial organization of the Olivetti company expands, its first advertising posters appear, designed by the Venetian painter Teodoro Wolf Ferrari.

1913

The number of employees increases: at the end of the year Olivetti personnel numbers 110. Production reaches an average of 23 machines a week. Camillo Olivetti celebrates the completion of the 1000th machine by distributing a special badge to the employees. He gives the prototype of the badge, made in gold, to his wife, Luisa Revel Olivetti. Years later, in memory of this affectionate gesture, the company institutes the practice of presenting employees with a similar golden award after 25 years of service.

1914

The Olivetti show room in the Gallery in Milan is opened.

1914

The war in Europe. The difficulties and the extraordinary atmosphere of those years are evoked by the workman Pietro Franchetto: "... on August 5th, 1914, Camillo Olivetti called us all together in the two assembly-line rooms: there were perhaps 200 workers and seven or eight clerks. It was a Wednesday morning, and the *Ingegnere* said to us: 'There's no lack of work, there's a great demand for our machines. (We were making four M 1's a day then.) But they've closed ... the banks and I can't pay you at present.' Most of us didn't draw our pay until things were more settled."

1915

On the wartime economy. "... Compared to other Italian mechanical industries of the time", Camillo Olivetti recalled, "ours, though modest in size, was well furnished with men, equipment, and machines; and it could not ignore the war effort, even though a completely disinterested offer of mine made to the proper military authorities was returned because ... it wasn't written in the proper official form. But the force of events was greater than bureaucratic ill-will, and a little while later, the officers commanding the Air Force found effective assistance in our plant, thanks to the disinterested good will of the staff, and of Burzio in particular. We made a bit of everything: projectiles, valves for dirigibles, rifle and machine-gun parts, and above all anti-aircraft fuses and airplane magnetoes, which the country then lacked ..."
Olivetti's contribution was essential in the production of these magnetoes. When Italy breaks with Germany—which had been the main source of supply, the Olivetti factory becomes the only national producer of this indispensable motor part.
In connection with this effort, the engineer Gino Modigliani is called to the factory. Later he becomes one of the directors of the Olivetti building program.

1917

The first machines for mass production are constructed:
two 10-ton presses.

1916–1918

During the war years the production of typewriters is reduced to a minimum. In 1917 Olivetti begins producing gyroscopes for torpedoes.

1918

The first factory building is enlarged.

1919

At the end of the war the Olivetti company returns to making typewriters. The government sends the management a testimonial of its gratitude for the company's dedicated service during the war. "The highly delicate assignment of producing the instrument vital to the functioning of the motor was faced by the Olivetti company with devotion and a keen industrial intelligence while other industries preferred to work in more profitable and easier fields. For this reason, with the deepest satisfaction, the Military Aviation Branch extends its thanks and its praise. Rome, July 26, 1919."

1919

A special family allotment is established: anticipating the government's future social legislation, the company pays all employees a supplement for each dependent child.

1920

The new M 20 typewriter is introduced in Italy.

1920

The M 20 is exhibited at the Brussels Fair. On this occasion Camillo Olivetti meets Giuseppe Pero, then secretary of the Italian Chamber of Commerce in Brussels, and hires him to head the sales division in Ivrea.

1920

A new branch is opened in Trieste. Abroad, sales begin in Argentina, and in Holland the Ruys Company undertakes exclusive distribution of Olivetti products.

1921

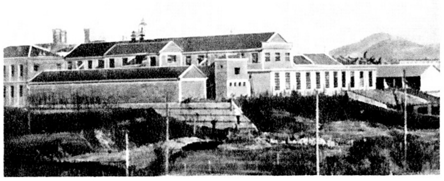
The first grinding machines for type bars are constructed.

1921

The number of employees rises to 250. Managerial personnel includes the engineers Dino Gatta, schoolmate and friend of Camillo Olivetti, and Ferruccio Mariotti, who is later to become director of the plant utilities.

1922

Establishment of the Olivetti Foundry company.
The technical director is Giacomo Saudino.



1922

The first customers assistance center is created. This grows into the present Customers Technical Assistance Service.

1922

Olivetti produces nearly 2,000 machines in the course of the year.

1923

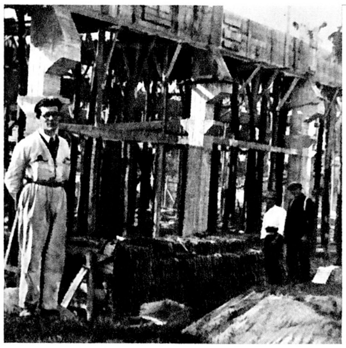
The first machine for cutting type-bar plates is constructed.

1923

The Turin branch office is opened at the corner of Via Pietro Micca and Piazza Solferino.

1924

Adriano Olivetti, eldest son of Camillo, begins to work at the plant as an unskilled hand.



1924

It is decided to establish a plant for the production of machine tools.

"... One day", as Domenico Quaccia, one of the foremen in charge of setting the new shop in operation, tells it, "the *ingegnere* Camillo sent for me and pointed out of the window to a piece of land just beyond the turn-off in the road to Montenavale, where the first signs of some building were visible. He said: 'This factory is already too big for me; I don't feel at home in it any more. I want to build myself a little shop like the one where I began, where I can experiment and start new projects.'"

1924

First night school courses in mathematics and advanced professional techniques.

1924

At the end of the year the number of employees reaches 400 and roughly 4,000 machines have been produced.

1925

Adriano Olivetti goes to the United States to study industrial methods.

1925

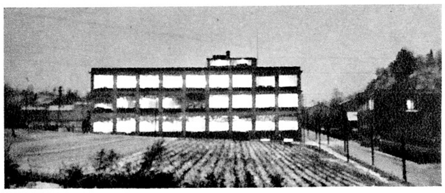
Special machines for cutting rack and pinion gears are constructed.

1926

The first high-precision Genevoise positioning machine goes into operation.

1926

Adriano Olivetti returns from the United States and works with his father in the management of the business.
A general reorganization of the company is begun.



1926

The O.M.O. factory (Officina Meccanica Olivetti) for the production of machine tools is established. O.M.O. has its own new building, and operates independently of I.C.O.'s (Ing. C. Olivetti company) production cycle. The initials I.C.O. identify the Olivetti factories which produce office machines.

1926

The first apartments for employees are assigned.

1926

The number of employees reaches 500. Annual production is 8,000 machines.

1927

Adoption of improved assembly methods, under the direction of Fulgido Pomella, shortens and rationalizes the entire production cycle.

1927

The number of employees reaches 600. The carpentry division is established.

1928

The Advertising Department is organized, and Adriano Olivetti becomes its first director.

1928

Massimo Olivetti, Camillo's second son, travels in the United States to study American techniques.

1929

The reorganization of production shows results: 13,000 machines are produced, and the company is in a sounder position to weather the world depression.

1929

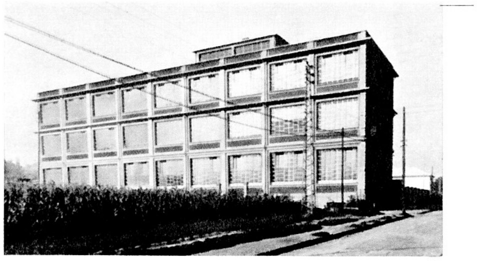
The Planning and Study Office is set up. Oddino Maritano joins the management of the O.M.O. factory. On the design of the new M 40, Gino Martinoli collaborates with Camillo Olivetti.

1929

In Barcelona the first allied foreign company is founded: S.A. Hispano Olivetti. Camillo Olivetti attends the foundation ceremony, having initiated the venture the year before with a group of Spanish friends led by Giulio Caparà.

1929

Camillo Olivetti travels to South America. His son-in-law, Arrigo Olivetti, had previously—in 1924 and 1925—investigated the South American markets. The immediate result of Camillo's trip is the reorganization and extension of the company's representation in Argentina.

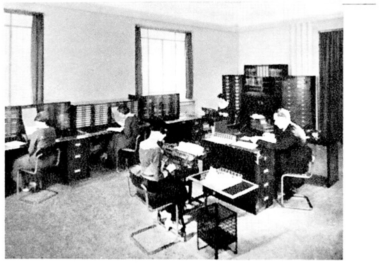


1930

First examples of the M 40. All the necessary equipment for assembly-line production of the new model is constructed at the O.M.O. machine-tool plant. Meanwhile the project for the first portable is being carried forward.

1930

The engineer Aldo Magnelli designs the project for the first Olivetti horizontal filing cabinet, the "Synthesis".

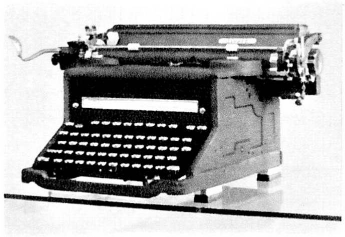


1930

The sales organization in Italy is strengthened. "New branch offices were opened in Venice, Trieste, Florence, Bologna, Catania, Palermo, and Bari. The sales staff was tripled, the publicity office was reorganized, and by the end of 1933, our battle against the world depression was won", Adriano Olivetti later writes in the company's fortieth annual report.

1930

In Brussels the allied company Olivetti Belge is officially set up. In Barcelona, in Via Pallas 107, the Spanish affiliate begins production with the M 20, which is replaced in the course of the year by the M 40.



1931

Mass production of the M 40 and the "Synthesis" filing cabinets begins. The Rome Municipal Registry Office places a first order for 1,400 filing cabinets.

1931

As the M 40 is perfected, the Precision Measurement Division which will have a decisive role in the qualitative development of Olivetti production, is established.

1931

A Development and Publicity Office is set up, directed by Renato Zveteremich. Participants in the office's program include the painters Xanty Schawinsky, Persico and Nizzoli, the architects Figini and Pollini, the graphic artists Munari and Veronesi, the printer Modiano, the Boggeri studio, and the architects Belgiojoso, Banfi, Peressutti, and Rogers.

1931

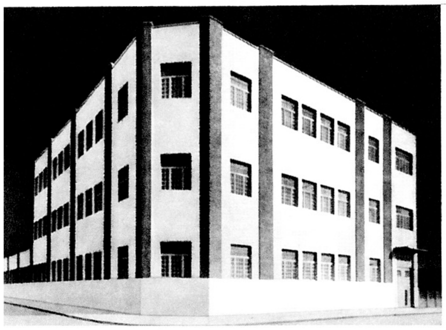
Work begins on the new portable typewriter MP 1. The body is designed by Aldo Magnelli.

1932

Domenico Burzio, Camillo Olivetti's closest associate, dies on March 22nd.

1932

An organization office, headed by Adriano Olivetti, is set up in Milan to promote sales of new products.



1932

In Buenos Aires, establishment of the S.A. Olivetti Argentina supersedes the sales office set up twelve years earlier.

1932

The first Olivetti portable, the MP 1, is presented on the market.

1932

The Domenico Burzio Foundation is created to provide social assistance for employees, supplementing the inadequate State social security program.

1932

The first summer camps for employees' children are opened.

1932

The Olivetti company is changed from a partnership to a joint-stock company. The capital is 13,000,000 lire, in shares of a thousand lire.

1933

On the first anniversary of Domenico Burzio's death, Camillo Olivetti delivers a memorial address to the employees.

1933

Adriano Olivetti is named Director General of the company.

25
ANNI
OLIVETTI

1933

Olivetti celebrates its 25th anniversary, as the reorganization begun in 1927 is completed. Production for 1933 totals 15,000 office machines and 9,000 portables. Personnel now numbers 870. Thirteen branches are in operation: Milan, Turin, Bologna, Genoa, Trieste, Venice, Florence, Perugia, Rome, Naples, Bari, Catania, and Palermo. There are 79 distributors in Italy. Olivetti is represented on the markets of the following countries: Egypt, Tunisia, Argentina, Brazil, Bolivia, Chile, Equador, Syria, the Aegean Islands, Albania, Austria, Belgium, Czechoslovakia, Denmark, France, Jugoslavia, Norway, Holland, Spain, Sweden, Turkey and Hungary. The Development and Publicity Office publishes the booklet "Twenty-Five Years of Olivetti".

1934

Plans for the construction of adding machines are studied, under the direction of Riccardo Levi.

1934

Additional social services for employees are organized and the factory's day nursery is opened.

1934

The number of employees reaches 1,000.

1935

The company begins a new phase of development: the engineer Gino Martinoli is appointed head of technical management, while sales and administration are directed by Dino Gatta, Arrigo Olivetti and Giuseppe Pero, who carry out expansion in Argentina, Brazil, Spain and France.

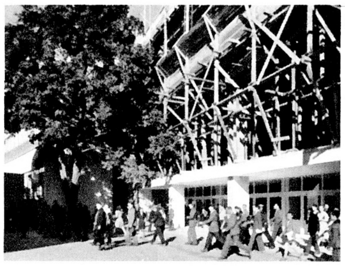
1935

The semistandard typewriter "Studio 42" is created by the engineer Ottavio Luzzati. The painter Schawinsky, and the architects Figini and Pollini collaborate with the factory technicians in developing a design for the body.

1935

The Mechanics Training Center is opened. Its modern system of technical instruction is set up by the engineer Agostino Sanvenero.

1936



The plant's buildings are extended. The company's Technical Office assigns the project to the architects Figini and Pollini. ". . . So began that project which was built up year by year until the façade of glass and concrete was completed. With all its defects, it remains a bold and noteworthy structure of which we are all rightfully proud . . ." (Adriano Olivetti).

1936

The project of designing a teleprinter is assigned to Massimo Olivetti and the engineer Giuseppe Beccio.

1936

The Export Office is set up, headed by Giovanni Enriques.

1936

Employees' vacation time is extended one week longer than the period stipulated by the national labor contract, and marriage bonuses are established.

1936

O.M.O. begins producing the TS 1 two-chuck vertical sensitive drill.

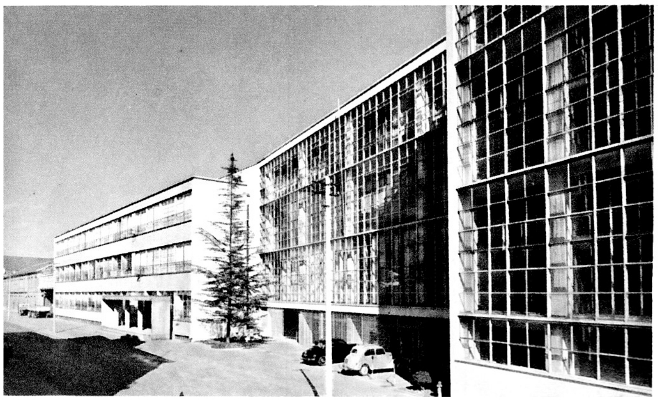
1936

The factory cafeteria service is organized.

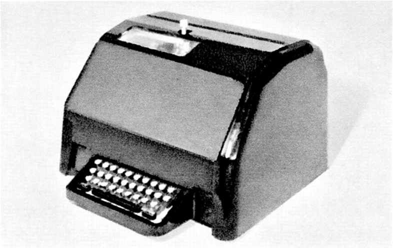
1936

Adriano Olivetti begins the studies for the Valle d'Aosta Development Plan, the first Italian experiment in organic regional planning. His associates include the architects Banfi, Belgiojoso, Bottoni, Figini, Peressutti and Rogers, the engineer Lauro and Renato Zveteremich.

1937



A new wing of the factory is completed. This expansion allows production to rise to 21,575 office machines and 15,694 portables; 9,502 machines are exported. Employees number more than 2,000.

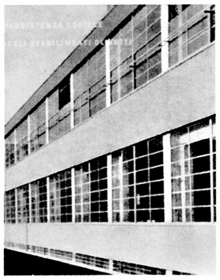


1937

The T 1 teleprinter goes into production.

1937

A direct sales organization is set up in Brazil.



tecnica ed
organizzazione

1937

Publication of the first issue of *Tecnica e Organizzazione,* a magazine dedicated to the technical and organizational problems of modern industry.

1937

The company's internal organization is developed. Transport services and a social assistance office are set up, and the accident-prevention and safety program is intensified. The pamphlet "Social Assistance in the Olivetti Factories" illustrates these advances.

1937

The project of designing and building a village for Olivetti workers is assigned to the architects Figini and Pollini.

1938

The first continuous furnace for copper soldering is constructed.

1938

O.M.O. produces its first FPO cam milling machine, designed by Camillo Olivetti.

1938

A new plant at Massa Apuania, designed by the architects Bottoni and Pucci, is under construction.

1938

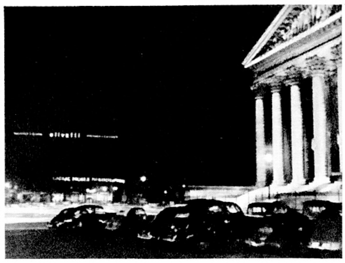
Camillo Olivetti resigns as President of the company, though still actively following its programs and development. He is succeeded by his son Adriano.

1938

The company's capital reaches 19,500,000 lire.

1938

The company sponsors the publication of a "History of Writing", edited by Sinisgalli, Schawinsky and Nivola.



1939

Foreign exports increase. In the course of the year 7,400 standard machines and 7,375 portables are sold abroad.
In Paris the S.A.M.P.O. Olivetti is founded. An agency is opened in Mexico City. At the end of the Spanish Civil War the Hispano Olivetti company returns to full production with help from the Ivrea factory.

1939

The Mechanics Training Center is supplemented by a high school.

1939

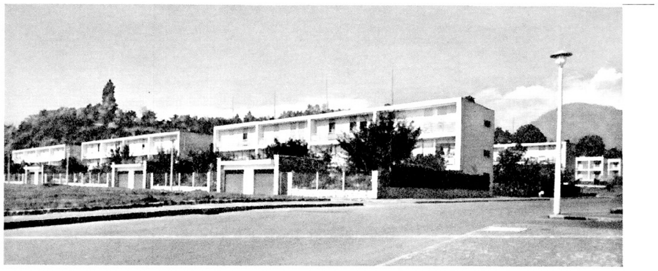
The new summer camp for employees' children at San Giacomo di Champoluc is inaugurated.

1939

Production in Italy: 23,413 office machines; 19,288 portables and semistandard machines. Teleprinter production reaches 333.
The employees number 2,300. The company's capital is increased to 23,000,000 lire. Guglielmo Jervis takes over the direction of assembly, and Agostino Sanvenero heads the "Z" equipment division.

1940

Olivetti's first adding machine appears, the MC4S "Summa".
It is the first calculating machine entirely designed and produced by the company. The use of pressure molding in constructing the body permits the creation of new designs for the shape and line of the product.



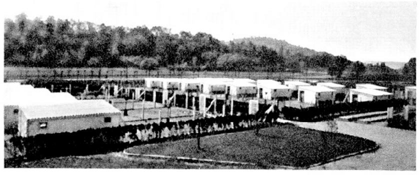
New houses for employees are built.

1940

At the Graphic Arts show of the Milan Triennal Exhibition, Olivetti wins a gold medal for its magazine *Tecnica e Organizzazione*.
The first prize for display design is awarded to Leonardo Sinisgalli and Giovanni Pintori.

Pressure molding of light alloys is adopted.

The factory library is organized.



1941

The Farm Center is set up to aid in solving the food problem for the factory staff during the war period.

1941

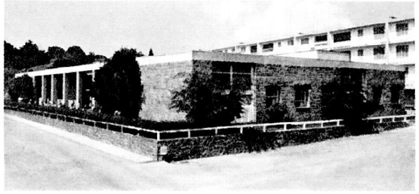
The adding machine MC4M "Multisumma" is brought out.

1942

Dino Gatta, one of Camillo Olivetti's oldest associates, dies on June 2nd.

1942

The first house for employees in the new residential district known as Borgo Olivetti is opened.



1942

The nursery school is opened. Functionally designed by Figini and Pollini, the new building satisfies the latest teaching criteria, already tried out in the temporary school building.

1942

Construction of Olivetti housing in the residential district of Via Castellamonte.

1942

Despite the difficulties created by the war, the company continues to grow. In Ivrea, personnel numbers 4,673, of whom 3,837 work in the factory. In the course of the year 37,752 office machines, 26,696 portables, and 2,561 calculators and accounting machines are produced. The company exports 7,169 office machines, 7,289 portables, and 44 calculating machines. In the board meeting on March 31st, capital is increased to 30,000,000 lire.

1942

In Barcelona the new Hispano Olivetti plant, designed by Italo Lauro, is inaugurated.

1943

At the I.C.O. factory on September 11th the National Liberation Committee is formed with the engineers Jervis, Martinoli, Enriques, and Drs. Polese, Canetta, and Villa.

1943

On October 23rd the Director General, Giuseppe Pero, takes over as President of the company—a post he is to maintain until the end of the war.

1943

Camillo Olivetti dies in the Biella hospital on December 4th.

1944

On August 6th at Villa Pellice the Nazis shoot and hang Guglielmo Jervis, commander of the Partisans.

1944

The new Invicta plant, designed by Italo Lauro, is built in Turin.

1944

Luisa Revel Olivetti dies at Vico Canavese on September 14th.

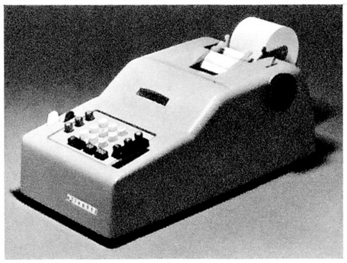
1944

In October a Nazi plan to destroy the factory is foiled by the factory technicians.

1945

In April, the Nazi and Fascist troops in northern Italy surrender. Through the National Liberation Committee of Ivrea and the Olivetti men who are its moving spirit, the German command offers the surrender of 55,000 armed troops to the Allied mission in the zone. During the struggle for liberation the following employees are killed: Alberto Allamanno, Pietro Antolini, Giorgetto Bertoldo, Luciano Bonino, Augusto Bordetto, Giovanni Broglio, Arduino Casale, Luigi Gallo, Ganio S. Vecchiolino, Alfredo Gianotti, Felice Giardano, Elio Guarnotta, Mario Guerreschi, Guglielmo Jervis, Germano Manfredi, Ferruccio Martinis, Enzo Migliori, Ricco Orla, Walter Perico, Giovanni Pignocco, Giovanni Scavarda, Giovanni Vesco, Alberto Zanetto, Giovanni Zoppo.
A plaque commemorates them at the entrance to the factory: "They rose against the shame of tyranny, and fell reaffirming their faith in Italy, in freedom, in justice; their fellow-workers treasure this example and entrust its memory to the gratitude of the Country. 1943-45."

1945



The plant sets up the machinery for mass production of the "Elettrosumma", a newly conceived calculating machine, designed by Natale Capellaro.

1945

The Barcelona factory is enlarged.

1945

The direct and indirect sales centers in Italy are reorganized. The number of employees reaches 4,283. In 1945, 23,099 office machines are produced, as well as 10,283 portables, and 2,561 calculating and accounting machines. Of these, 6,090 machines are exported.

1946

The new Invicta plant is inaugurated in Turin.

1946

Reconstruction of the Apuania plant, destroyed by the war, is begun.

1946

Two new houses for employees are constructed in Ivrea in the Canton Vesco district.

1946

The company becomes active again on foreign markets. A first contingent of 600 machines is sent from Ivrea to Buenos Aires, via New York. In the course of the year, Olivetti Argentina, through a broad system of branches, sells 3,296 office machines, 492 portables and 272 calculators.
Exports to Uruguay begin, and in New York a first sales base is established.

1946

O.M.O. produces the automatic universal grinding machine, R 2.

1946

Introduction of the "Elettrosumma 14", an electric printing adding machine, designed by Natale Capellaro. It is the first model in a series that establishes Olivetti internationally in the calculator field.

1946

Gino Martinoli leaves the General Technical Management of the company. He is succeeded by Giuseppe Beccio. Giulio Zanetti becomes Technical Director of O.M.O.

1946

The Office of Publicity Techniques, re-established in Milan, is headed by Giovanni Pintori.

1946

The Gold Pin Association commemorating Camillo Olivetti's gesture in 1913, is formed among employees with 25 years' service in the company.

1947

Production of the "Multisumma 14", a semi-automatic, electric printing adding and multiplying machine.

1947

In London British Olivetti Ltd. directed by Fulgido Pomella, is established. In Glasgow a factory for the production of office machines goes into operation.

1947

The company's capital reaches 120,000,000 lire.

1948

Massimo Olivetti dies on February 20th. Born in 1902, he took his degree in physics and natural sciences at the University of Turin in 1925. With Giuseppe Beccio he created the Olivetti teleprinter. President of the company just after the war, since 1946 he had been Vice-President.

1948

The "Lexikon 80" typewriter and the "Divisumma" calculator go into production. Technical construction by Giuseppe Beccio and Natale Capellaro, respectively; body designs by Marcello Nizzoli. New departures in their fields, the two machines open a vast market for the company.

1948

The equipment divisions set up the first continuous processing lines for cast-iron and pressure-molded parts.

1948

Production of the T 2 teleprinter begins.

1948

July: capital is increased to 600,000,000 lire.

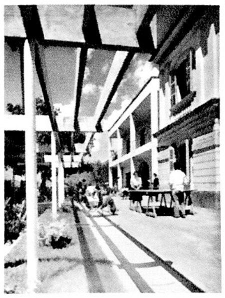
1948

The Management Council of I.C.O. is formed. The new organization, in addition to its general advisory powers, controls the allocation of funds for social services and assistance. The Council is composed of a chairman (who is the President of the company) and 14 councillors, six appointed by the chairman, three elected by the workers, three by the clerical staff, one by the heads of departments, and one elected jointly by the whole body.

1948

The Sports and Recreation Group is created.

1949



At Burolo, in the Canavese hills, the permanent convalescent home for employees is opened.

1949

Three new allied foreign companies are formed: Olivetti Mexicana S.A., Olivetti Africa Pty. Ltd., and Austro Olivetti Büromaschinen A.G.

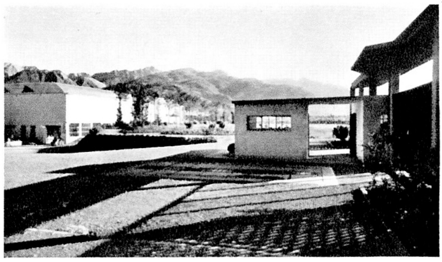
1949

Enrico Fermi visits the Ivrea plant.

1949

Capital totals 1,200,000,000 lire.

1949



In the reconstructed Apuania plant the production of "Synthesis" office furniture is resumed.

1949

The "Summa 15", hand-operated adding machine, is put on the market.

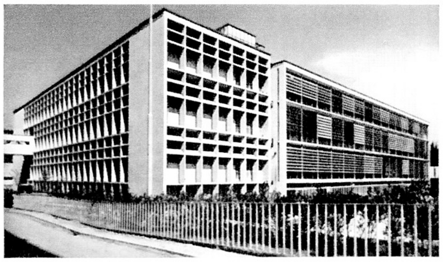
1949

Employees of I.C.O. now number 4,835. Production reaches 56,336 standard typewriters, 29,920 portables and semistandard machines, and 12,538 calculating and tabulating machines. Exports include: 30,152 standard machines; 14,908 portables and semistandard machines; and 6,063 calculating and tabulating machines.

1950

The Central Time Study and Methods Office reorganizes the assembly of typewriters and calculators, using conveyors and a continuous processing line. The office also studies work movements and the functional distribution of work-positions.

1950



The Ivrea plant is enlarged to the west and south by the architects Figini, Pollini, and Fiocchi.

1950

The Olivetti Bull S.p.A. company is formed for the sale of Bull's punched-card accounting and statistical machines in Italy.

1950

In Ivrea the Data Processing Center is organized, equipped with Bull machines.

1950

An art exhibit, entitled "Twenty-Five Years of Italian Painting", is held at Ivrea. This is the first large show arranged by the Cultural Center, which is now associated with the greatly enlarged Library. Later there are important one-man shows of De Pisis, Guttuso, Rosai, Metelli, and Casorati.

1950

The new portable, "Lettera 22", and the "Lexikon Elettrica" are brought out. Technical features are by Giuseppe Beccio, the body designs by Marcello Nizzoli.

1950

The Olivetti Corporation of America is established in New York and is headed by Dino Olivetti, Camillo's third son.

1950

The first *Palma d'Oro* award for advertising is given to the Olivetti company.

1950

A two-year technical course for workers, a night course in technical design, and a two-year course in general education are inaugurated.

1951

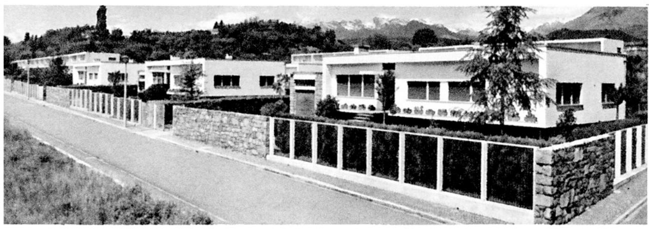
A new plant is opened in Buenos Aires, Argentina, and is headed by Piero Rozzi.

1951

The first transfer machine and the first automatic type-bar selector are constructed.

1951

A new selection of book-keeping machines is introduced: the "Elettrosumma Banca", the "Multisumma Banca", and the "Divisumma Banca".



1951

A group of one-family houses by Marcello Nizzoli and G. M. Oliveri, is built in the Via Castellamonte district of Ivrea.

1951

The city administration of Ivrea decides to draw up a new town development plan, and the Olivetti company participates in the project.

1951

At Marina di Massa the summer camp building, designed by Cascio and Fiocchi, is completed.

1951

In Rome the Foreign Relations Office is set up.

1951

On November 4th the cornerstone is laid for the Pozzuoli factory, designed by Luigi Cosenza.

1951

Olivetti's first calendar comes out, dedicated to the works of the Douanier Rousseau. Subjects of later calendars include: Pompeiian painting (1952); the paintings of Carpaccio (1953); the paintings of the Lorenzettis (1954); Etruscan frescoes (1955); the frescoes of Masaccio (1956); the mosaics of Ravenna (1957); and twelve plates of Georges Braque (1958).

1952

Production and the training program for local labor begins at Pozzuoli in a temporary plant, while work proceeds on the new factory.

1952

The new semistandard typewriter, the "Studio 44", is offered on the market.

1952

Sele Arte, a bimonthly review and digest of international art events, is brought out in Florence. It is edited by Professor Carlo L. Ragghianti and published by Olivetti.

1952

Construction begins in Ivrea on the new Study and Experiment Center, designed by Eduardo Vittoria.

1952

Two new allied companies are created: the Olivetti Industrial in Sao Paulo, Brazil, and the Olivetti Australia Ltd. in Sydney.

1952

notizie olivetti
1

The first number of *Notizie Olivetti* appears. The monthly magazine of company news and information is edited by Libero Bigiaretti.

1952

Olivetti Exhibition at the Museum of Modern Art in New York. For the first time a European industry is invited by the Museum to show its products and its graphic work.

1952

Personnel employed in the factories of Ivrea, Turin, and Apuania totals 6,247. Production reaches: 69,509 office machines (of which 33,546 are exported); 65,081 portables and semistandards (23,433 exported); 45,752 calculating and tabulating machines (24,629 exported).

1953

In January Giovanni Enriques leaves his position as Director General of the commercial management, and is succeeded by Ugo Galassi.

1953

In the commercial reorganization, two new allied companies are formed: in Frankfurt the Deutsche Olivetti Büromaschinen A.G.; in Bogotá the Olivetti Colombiana S.A. Also in the course of the year, new branches are opened in Italy, and the sales program is expanded.

1953

The photoelectric pantograph MR 3 for printing textiles goes into production at the O.M.O. plant.

1953

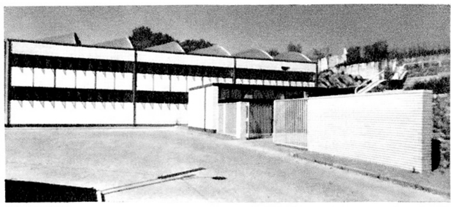
March 10th: capital is increased to 2,400,000,000 lire.

1953

The carpentry division's new building at San Bernardo di Ivrea designed by Nello Renacco, is inaugurated.

1953

The Apuania plant is again enlarged.



1953

The new foundry for light alloys begins operation in Ivrea.

1953

In England, the Watford Technical College holds an exhibition of Olivetti's industrial design and products.

1953

The Social Relations Center is created for assistance—outside the factory—to the people of the Canavese region.

1954

The two-register "Duplex" electric calculator is introduced at the Milan Fair.

1954

The Olivetti show room on Fifth Avenue, New York, is opened. Architects: Belgiojoso, Peressutti, and Rogers. Interior mural by Costantino Nivola.

1954

At the Barcelona factory, the Camillo Olivetti Day Nursery is opened.

1954

The "Lettera 22" is awarded the *Compasso d'Oro,* a national prize for industrial design.

1954

November 18th: capital is increased to 3,600,000,000 lire.

1954

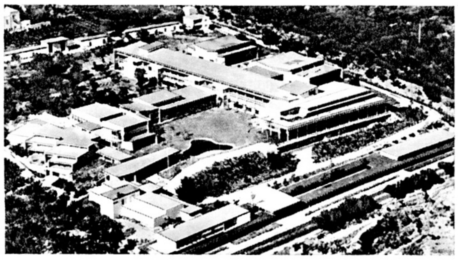
The Servomechanism School is set up at the Personnel Training Center.

1955

The first three "Sele Arte-Olivetti" documentary films on art are shown in Rome.

1955

March 26th: capital is increased to 5,400,000,000 lire.



1955

Inauguration of the factory and employees' housing at Pozzuoli on April 23rd.

1955

In Agliè Canavese the factory for the production of the "Lettera 22" begins operation.

1955

The accounting machine "Audit 202" is introduced.

1955

The Olivetti Building in Via Clerici, Milan, housing the Sales Organization's main offices, is opened. Architects: Fiocchi, Bernasconi and Nizzoli. Decoration by Nizzoli, Pintori, and Moreni.

1955

The Olivetti Cultural Center collaborates with the Museo Civico of Turin on the exhibition of "Piedmontese and Lombard Mannerism in the 17th century" at Palazzo Madama.

1955

The development and strengthening of the commercial organization in Italy and abroad continues under the direction of Ugo Galassi. The Center for Specialized Sales Instruction opens at Villa Natalia, Florence.

1955

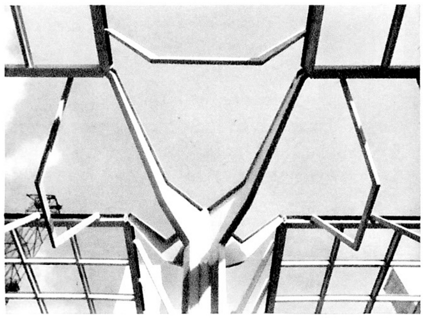
Construction of a new O.M.O. plant, designed by Eduardo Vittoria, begins at San Bernardo di Ivrea.

1955

Olivetti Canada Ltd. is established in Toronto.

1955

Olivetti products form the nucleus of the exhibition of "Italian Industrial Design" at the Italian Cultural Institute in London. The Olivetti company takes part in the International Exhibition of Advertising and Graphic Art, held in the Louvre.



1955

In Ivrea the construction of the new I.C.O. plant, designed by Figini and Pollini, is begun.

1955

The Canavese Institute of Town and Country Redevelopment (I-RUR) is formed to promote new agricultural and industrial enterprises in the interest of economic and social progress, and to relieve unemployment. Adriano Olivetti becomes its first director.

1955

In Ivrea, in September, the national Olivetti prizes in architecture and city planning are awarded for the first time.

1955

The Barcelona plant is enlarged.

1955

The *Compasso d'Oro* first prize for merit in the field of industrial design is awarded to Adriano Olivetti.

1955

In Brussels the 25th anniversary of the Olivetti Belge company is celebrated.

1955

At Ivrea the new Study and Experiment Center building is inaugurated.

1955

The "Lettera 22" is selected as the subject for the first international Milan-Liege typography and advertising competition.

1955

On December 24th Adriano Olivetti addresses the employees on the company's state of affairs. "The people on our payroll in Italy, not counting our agents and representatives, now number 11,353, and if we count the employees of our allied companies, the total is 16,000 . . ."

1956

In January the new O.M.O. plant at San Bernardo di Ivrea is inaugurated. O.M.O., though functioning as an independent factory, is included in the over-all Olivetti production organization as the Machine Tools Division.

1956

Starting in the Agliè plant, the Olivetti company reduces the working week from 48 to 45 hours, with no reduction in salary. This plan, later extended to the Ivrea plant, is the first of its kind in Italy.

1956

April 5th: capital is increased to 7,800,000,000 lire.

1956

Three new products are introduced at the Milan Fair: the "Tetractys", a superautomatic calculator with two registers; the "Divisumma 24" calculator; and the "Audit 302" alphanumeric accounting machine.

1956

Olivetti products are selected to represent office machines at the industrial-design celebrations held in Liege in May.

1956

Adriano Olivetti is awarded the 1956 First Prize in Architecture of the *Cercle d'Etudes Architecturales* in Paris.
This is the first time that the award is given to a foreigner, and the citation reads: "We wanted to pay international tribute to the architectural merits, the originality of industrial design, the social and human aims present in everything done by the Olivetti company."

1956

The gold medal of the Architectural League of New York is awarded to the architect Giorgio Cavaglieri and to the painter Leo Lionni for their design for the Olivetti show room in San Francisco.

1956

Giovanni Pintori and the Printing Department of the Olivetti company are awarded the *Linea grafica* and *Fiera di Milano* prizes for the best design and printing in advertising.

1956

The Gold Pin Association celebrates its tenth anniversary.

1957

In January the Olivetti de Venezuela S.A. is formed in Caracas.

1957

A new plant, designed by the architect Marco Zanuso, is begun at São Paulo, Brazil, in February.

1957

Giuseppe Pero, Arrigo Olivetti, and Dino Olivetti are named Vice-Presidents of the company.

1957

The new day nursery is inaugurated at Villa Casana, Ivrea, in March.

1957

The "Graphika", a manually-operated typewriter with proportional spacing of the letters, and the "Elettrosumma 22" calculator are shown for the first time, at the Milan Fair.

1957

The "Tetractys" and O.M.O's "Photoelectric Pantograph" are introduced at the fair in the New York Coliseum.

1957

An exhibition entitled "Olivetti Design" is held at the Institute of Contemporary Arts in London.

1957

On June 1st the working week of the Olivetti company at Ivrea is reduced to 5 days, without reduction in salary.

1957

The British Olivetti company celebrates its tenth anniversary.

1957

The Olivetti de Centro America company is established in Havana.

1957

September 11th: capital is increased to 10,800,000,000 lire.

1957

Giuseppe Beccio, the General Technical Director, dies in Turin on September 17th.

1957

In Ivrea construction of the buildings for the Social Services Belt is begun. The architects are Figini and Pollini.

1957

Ivrea's monument to Camillo Olivetti by Emilio Greco is unveiled on September 29th.

1957

Dino Olivetti is named General Technical Director.

1957

In Pittsburgh, the National Management Association awards the annual Eduard Seits prize to Adriano Olivetti for "his progressive work in the field of international company management."

1957

The assembly line in the new factory in São Paulo, Brazil, begins operation on October 15th.

1957

The Olivetti Argentina company celebrates its twenty-fifth anniversary. Its personnel numbers 1,142, and it has 12 branch offices and 170 agents. The number of "Lexikon 80"s produced during the year is 19,895.
At Buenos Aires, the new plant for the production of calculating machines is under construction. Architect: Marco Zanuso.

1957

In Ivrea the new I.C.O. plant for the production of calculating machines is completed. The commercial organization in Italy is extended; there are 30 branch sales offices and 235 distributors.

1957

In Caluso, Piedmont, the Sada-Olivetti plant for mimeograph machines, ribbons, and carbon paper is inaugurated on December 15th.

1957

The number of books withdrawn each month from the Olivetti Library averages 6,000.

1957

The allied company Olivetti A.S. is formed in Copenhagen.

1958

The new "Elettrosumma 22" calculating machine is brought out.

1958

On March 1st Giuseppe Pero retires as Director General in charge of administration, remaining in office as Vice-President. He is succeeded in his former position by Roberto Olivetti, the son of Adriano Olivetti.

1958

October: Olivetti personnel in Italy numbers 14,200. The 17 allied foreign companies employ a total of 10,000. Production in Italian factories (Ivrea, Agliè, Turin, Massa, and Pozzuoli) and abroad (Barcelona, Glasgow, Buenos Aires, São Paulo, and Johannesburg) amounts to the equivalent of 6.2 standard typewriters a minute. Exports represent 60% of the company's entire production.
As new typewriters and calculating machines continue to appear, studies and experiments are carried on in electronics.

References

1962 Olivetti Lettera 22 Service and Adjustment manual
From the collection of Bill Wahl

Olivetti Lettera 22 Portable User Manuals
From the Internet, various scans.

1964 and 1973 NOMDA (National Office Machine Dealer's Association) Blue Books
From the collection of Bill Wahl

Olivetti 1908 – 1958
From the collection of T. Munk

Resources

There are a number of resources for the Typewriter repair enthusiast and professional, often put together by other enthusiasts. Here are places on the web that you can go and find advice, encouragement, wisdom and even find spare parts for your machine:

Professor Polt's Omnibus List of Typewriter Repair Shops
Need a ribbon, a part, a whole typewriter or don't want to DIY? Take a trip into the past in one of the handful of typewriter repair shops around the world. Ensconced within each is a wizened wizard who can make your typewriter sing like it was new!
http://site.xavier.edu/polt/typewriters/tw-repair.html

JJ Short - Typewriter Platen and Feed Roller repair
New rubber can make your typewriter feel like new again and quiet the clacking of a decades-hardened platen. Re-Cover your platen and feed rolls today!
http://www.jjshort.com/typewriter-platen-repair.php

The Typewriter Database Typewriter Repair Section
Parts, Service and Reference Manuals
http://typewriterdatabase.com/manuals.php

Spare parts can be newly manufactured using modern technologies
http://3dtypewriterparts.com

This Evernote notebook contains articles from the **Antique Typewriter Maintenance** and **Antique Typewriter Collectors** Groups on Facebook. You do not need to use the Evernote application nor be registered on the Evernote web site to use this resource, however, if you do use Evernote, you may add this as a shared notebook to your own collection.
https://www.evernote.com/pub/rdj999/antiquetypewritermaintenance
https://www.facebook.com/groups/typewritermaintenance/
https://www.facebook.com/groups/TypewriterCollectors/
Selectric/IBM Specific:
https://www.facebook.com/groups/gbtwshop/

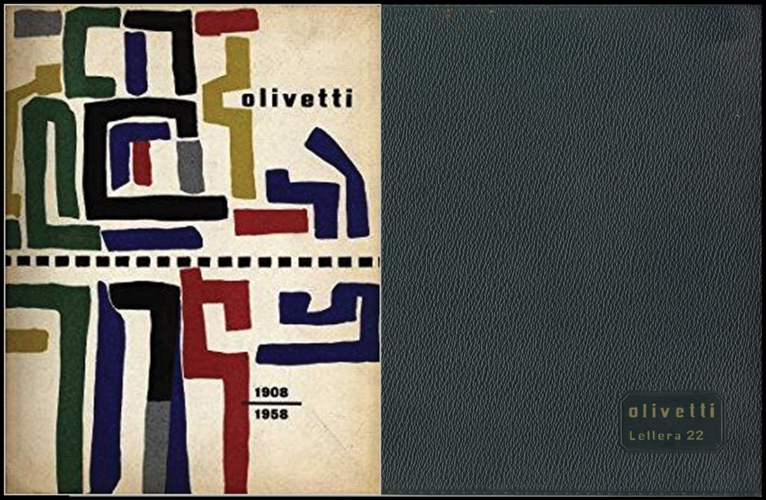
TYPEWRITERS is an automated list for typewriter fans, with over 1800 members. Visit this page to learn more and join.
http://groups.yahoo.com/group/TYPEWRITERS

The Portable Typewriter Forum is another active forum, with over 2000 members, dedicated primarily to post-1940 portable machines. Visit this page to learn more and join.
http://groups.yahoo.com/group/theportabletypewriterforum

The Golfball Typewriter Shop is a forum to share information about the Selectric, its clones, how it revolutionized the office environment, and any other subject along these lines. Technical debates are highly encouraged.
http://groups.yahoo.com/group/golfballtypewritershop

Typewriter Talk Forum:
http://typewriter.boardhost.com

TO
COLLECT
TW DB
AND
PRESERVE



TWDB Operation: OOPRAP

The Reason: Well, it's right there on the TWDB logo, "To Collect and Preserve". There's a century worth of collected typewriter repair knowledge out there in out-of-print and likely never to be reprinted material. Knowledge that needs to be found, preserved and disseminated in order for future generations of typewriter repair professionals and enthusiasts to know what the heck they're doing to their machines, what tool to do it with and what tolerance the widget needs to be adjusted to for optimum performance. There is also valuable historical data in these texts, often hidden between the lines, which can tell us quite a bit about when certain mechanical feature changes happened and why - and that part fits the TWDB mission of researching accurate age lists. Thus was born Operation: OOPRAP, or the Out-Of-Print Reference Archive Project.

The Goal: to collect and archive high-resolution scans of every parts and service manual and service bulletin put out by a typewriter manufacturer, ever, and the same for any general typewriter repair and maintenance book now out-of-print and probably vanishingly rare. To create a library of the base source knowledge in the field through the 20th Century to inform collectors, enthusiasts and typewriter mechanics in the 21st Century and beyond.

The Typewriter Database
typewriterdatabase.com
Archivist: T. Munk